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THE MANUFACTURE OF PHOSPHORIC ACID FROM PHOSPHORUS.

MR. ADOLPH SOMMER, of Berkeley, California, describes in *The Pharmacist*, for December, the various processes for making phosphoric acid heretofore employed, and proposes a new method, with several modifications of apparatus, which are described by him, as follows:

A common tin can (see p. 2), with removable cover, is made perfectly water-tight by resoldering the seams. Through the centre of the cover a hole is punched, just large enough for the stem of a long thermometer to pass through; and three or four more holes, if not more than $\frac{1}{4}$ inch in diameter, are made near the circumference of the cover. All

around the inside of the can there is suspended by little hooks, which are formed by making incisions into the upper edge of the can, a piece of cloth reaching from the top to the bottom of the can. In the can is placed a glass jar which must be able to hold at least $3\frac{1}{2}$ times as much water, by weight, as there is P to be oxidized. A funnel, amply large enough to hold the P, and wider than the jar, is placed upon the latter, and the funnel tube loosely closed by a piece of glass. (Instead of a glass jar and funnel, a bottle may be used which has been cut in two at about three-fourths of its height. The upper and smaller portion of the bottle is inverted and placed into the lower portion, and answers the purpose of holding the P quite well.) Four or five times as much water as the weight of the P is then poured

into the space between the tin can and the glass jar, and the whole apparatus filled with carbonic acid gas. When, by the extinction of a burning taper, which is introduced into the upper portion of the can, it becomes evident that the atmospheric air has been entirely displaced, the sticks of P are laid in the funnel, the thermometer bulb buried between the sticks of P, the cover put on the can, and all openings, save one, closed by plugs. Through the open hole carbonic acid is passed into the apparatus for a short time, in order to remove the air which has entered the apparatus during the introduction of the P. When this is considered accomplished, the last hole is closed, the apparatus put in a cool

place, which is not exposed to draught, and allowed to stand at rest for some time. When it is observed that the temperature within remains constant, one hole is opened, and the apparatus left undisturbed for at least twenty-four hours. If the temperature within this time has not approached $35^{\circ}\text{C}.$, another hole may be opened, and the same precautions observed as before. The number of holes that can thus be opened, before the critical temperature (above $35^{\circ}\text{C}.$) is reached, depends, of course, upon the temperature of the atmosphere surrounding the apparatus. If, at any time, from an excessive supply of air, or from an unusually high temperature of the atmosphere, the temperature of the P should rise above $35^{\circ}\text{C}.$, there is great danger that it will, as the writer has found to his sorrow in

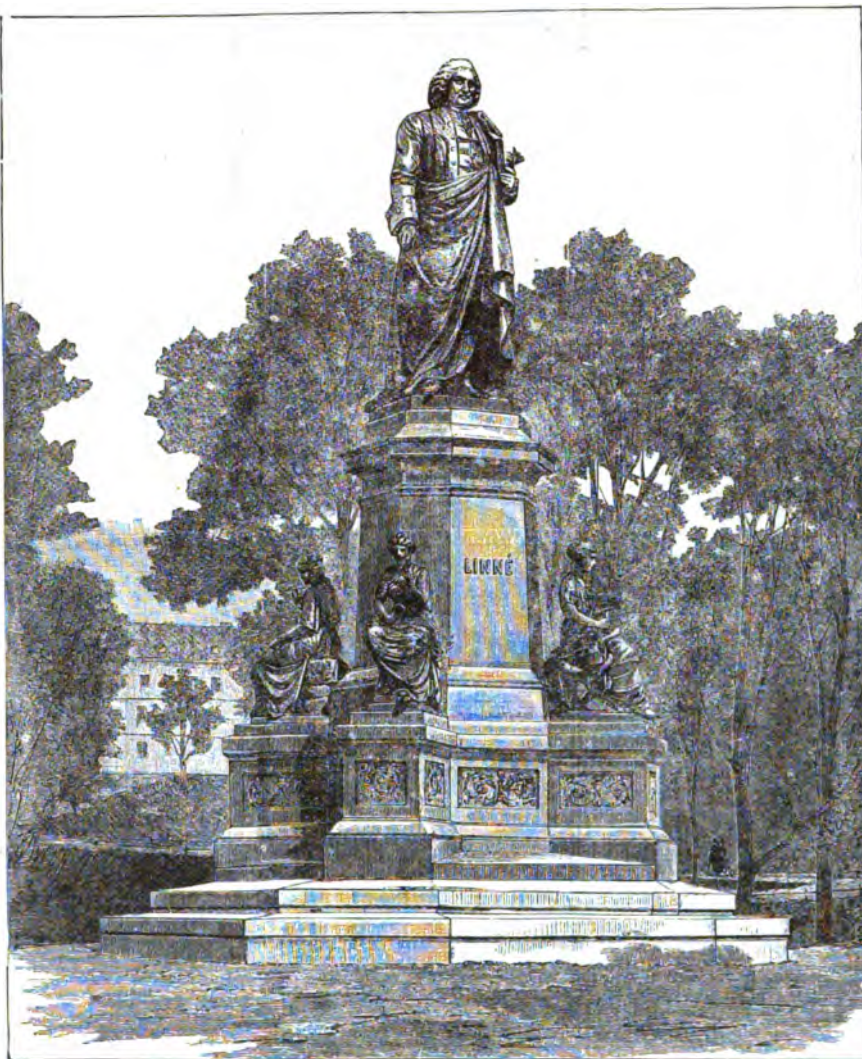
explanation of some of the features adopted in this apparatus. The water in the apparatus was found necessary, because the ordinary atmospheric air does not contain sufficient moisture to dissolve the coating of oxides formed on the sticks of P as rapidly as it is formed; but it was also found, that unless, by some means, the water was brought to the space above the P, the air entering the apparatus would not become moist sufficiently fast to produce the effect desired. A piece of cloth, lining the inside, and capable of drawing the water from the bottom to the top of the apparatus, suggested itself as the simplest means of effecting this purpose, and it does fulfil this function very satisfactorily. The reason for the adoption of several small holes instead of a single large

opening, as a means of regulating the supply of air, is so evident that it needs no explanation. This style of apparatus is, however, not very durable, because of the slight, though perceptible, evaporation of the P, which causes a deposit of phosphoric acid to form on the inside of the tin can. This acid deposit slowly corrodes the tinned iron, and causes, after about three months of continuous operation, the formation of holes in the sides of the can. Through these holes an excessive amount of air is liable to enter the apparatus and cause the melting of the P.

II.

For the construction of a continuous and transparent oxidizing chamber, a thick bottle, preferably one of white and very clear glass, is selected, and the bottom very carefully cut off. (Figure 2.) (This cutting or crack-

ing is best done by means of specially prepared charcoal pencils made of powdered charcoal, saltpeter, and tragacanth).^{*} A common unglazed flower pot, the largest that will go into the bottle, is inserted into the open bottle, so that the bottom of the flower pot is directly over and in contact with the neck of the bottle. A funnel, the conical part of which is at least one inch shorter than the flower-pot, is then inserted in such a way that the funnel tube passes through the bottom of the flower-pot and the neck of the bottle. Into the neck of the bottle the funnel tube is securely fastened by means of



The monument to Linné in Stockholm.

(See page 10.)

several instances, rapidly reach the melting point of P, which is $45^{\circ}\text{C}.$ When this occurs and the P melts, it will naturally run into the receiver (the glass jar), and there, being screened from the action of the air by a covering of acid liquid, congeal into a solid cake. It then becomes necessary to take the apparatus apart, to remove the P from the receiver, and to recommence the whole operation. After the apparatus has once been regulated, however, it requires no further attention until the P is entirely oxidized, which can be known by the thermometer indicating the same temperature within the apparatus as prevails without.

It may seem desirable to have an

^{*} [See, also, advertising page 28 of AMERICAN DRUGGIST, for December, 1885.—ED. AMER. DRUGG.]

a perforated rubber stopper or paraffined cork, which must be water-tight. Over the protruding end of the funnel-tube is fastened, by means of a bit of rubber tubing, a piece of glass tube, closed at one end and having a hole on one side. This closed tube is pushed so far over the funnel-tube that the opening in its side is a little above the end of the funnel tube.

This portion of the apparatus is then placed, neck downward, over a large glass jar.

Through the centre of the bottom, which was cut off the bottle, a hole of at least five-eighths of an inch in diameter is drilled. The bottom is then put into its original position on the bottle and fastened by glueing strips of paper over the joint. The hole which was drilled through the bottom is loosely closed by a paraffined cork, through which passes a thermometer.

When the oxidizing chamber is thus completed, the cork is removed, and by means of a funnel, having a long

undisturbed for about twenty-four hours. If at the end of this time the temperature of the P is below 35° C., a little more ventilation may be given by enlarging the notches in the cork. Whenever it is seen that the P is nearly consumed or the water evaporated, a fresh supply is added through the hole without taking the apparatus apart.

The flower-pot in this apparatus performs the same function as is fulfilled in the former (I.) by the cloth lining, namely, that of absorbing the water and moistening the air. The closed glass tube which is attached to the funnel prevents the access of air from below to the P in the oxidizing chamber.

The acid that is formed runs down the funnel into the closed glass tube and thence through the lateral opening into the glass jar, which serves as receiver.

III.

A still simpler form of a continuous oxidizing chamber I have constructed

After the pouring of a few drops of water into the funnel, whereby the bend of the glass tube is closed against a downward escape of gas, the apparatus is either filled with carbonic acid gas in the manner described under (II.), or the oxygen is simply removed therefrom by burning P in the interior. For this latter purpose a small iron deflagrating spoon, which will pass through the hole in the flower-pot, is employed. A bit of P is laid into the spoon, ignited and quickly inserted into the flower-pot. When the P ceases to burn, the spoon is lifted out, and the hole in the pot immediately closed by means of a cork. The apparatus is left undisturbed for a short time, until the air within has cooled to the normal temperature. The introduction of burning P is then one more repeated, and after cooling, the apparatus is charged with P through the hole in the flower-pot.

The further manipulations and precautions are the same as have been given in the description of style II.

FIG. 1.

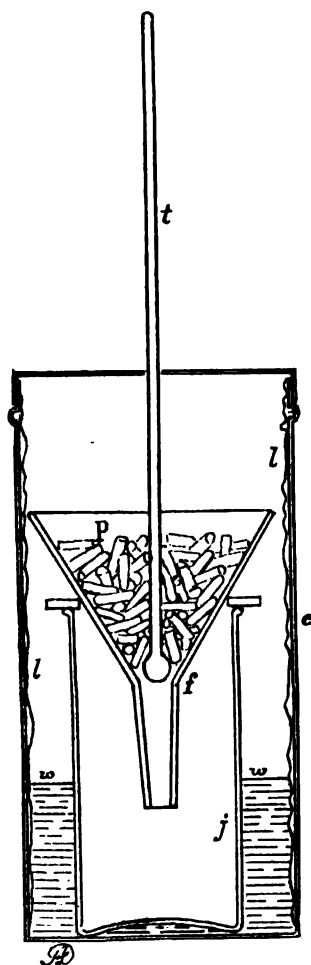


FIG. 1.—f, funnel filled with P; t, thermometer; j, glass jar; w, water; l, cloth lining; c, tin can.

FIG. 3.

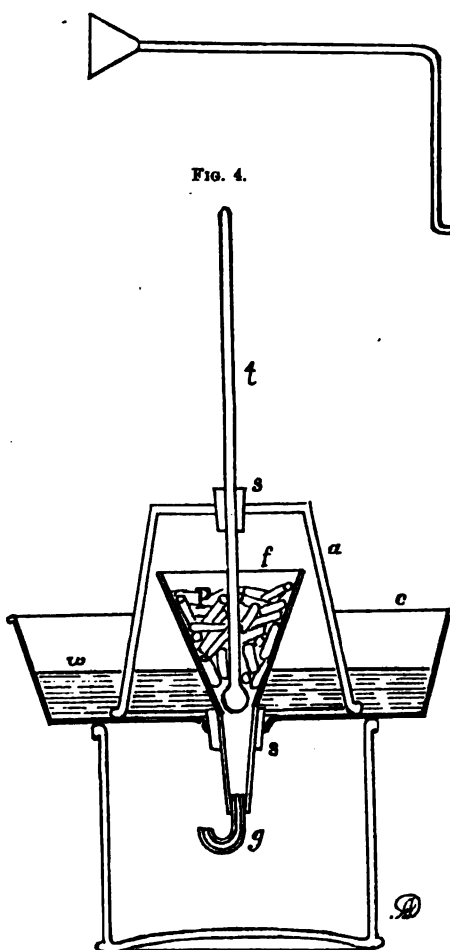


FIG. 3.—f, funnel filled with P; t, thermometer; j, glass jar; w, water; a, perforated stopper; a, flower pot; g, bent glass tube; c, tin pan.

FIG. 2.

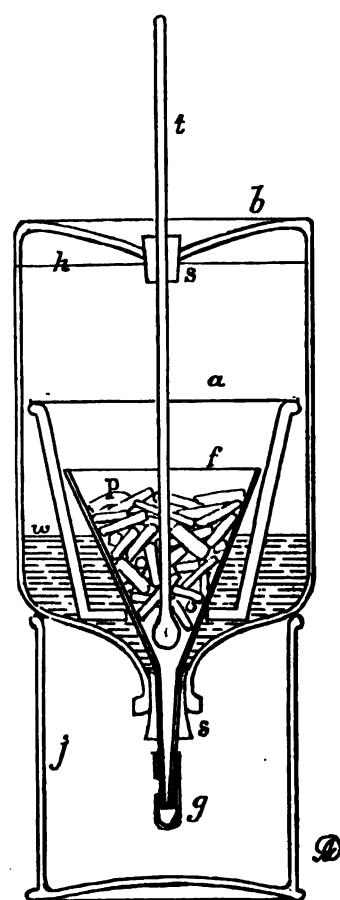


FIG. 2.—f, funnel filled with P; t, thermometer; j, glass jar; w, water; b, bottle (inverted); a, perforated stopper; a, flower pot; g, glass tube with opening on its side; h, line of the cut.

bent tube (Figure 3), water is poured into the space between the walls of the bottle and the flower pot, until its level is within a short distance from the upper edge of the funnel within the flower-pot. A few cubic centimeters of water are also poured into the funnel until the water in the closed glass tube, which is attached to the end of the funnel tube, reaches a little over the end of the funnel tube.

Then a tube connected with a carbonic-acid generator is inserted into the hole and carbonic acid gas passed into the oxidizing chamber. When the air within has been entirely displaced by the gas, sticks of P are dropped through the hole into the funnel, until the latter is nearly filled. The thermometer and cork are then placed into position and the apparatus allowed to stand for a few hours. Then some notches are cut lengthwise into the cork and the apparatus again left

in the following manner (Figure 4): Through the bottom of a tin pan a hole of about one inch in diameter is cut, and a tube of tinned iron about a half-inch long soldered into it. By means of a perforated cork a funnel is fastened into this hole so that the funnel tube passes through the bottom, while the body of the funnel is inside of the tin pan. Into the end of the funnel tube is inserted and fastened by a bit of rubber tubing a glass tube bent in a half circle. A common unglazed flower pot is inverted over the body of the funnel and a paraffined cork with a thermometer inserted into the hole, which is in the bottom of the flower-pot. The whole apparatus is then placed over a glass jar and some water poured into the tin pan.

The tin pan may advantageously be displaced by a wooden water bucket, whereby the apparatus becomes almost indestructible.

The rate at which the P is oxidized by my method is a comparatively slow one. In an apparatus of style I., in which the temperature was kept on an average eleven degrees higher than that of the surrounding air, and the P, which was in the form of a solid cake of nearly five inches in diameter, exposed a surface of about 18 square inches, the P was oxidized at the rate of about 10 Gms. a day. The difference between the inner and outer temperature does not seem to be affected to any extent by an increase or decrease of the prevailing temperature; for nearly 200 observations which were taken at temperatures of the atmosphere ranging from 10 to 22° C., gave, while all other conditions remained equal, an almost constant difference.

The acid which collects in the receivers has a specific gravity of 1.48 to 1.5, and is composed mainly of phosphorus and phosphoret acids in the propor-

tion of 1 to 4, besides water. The exact composition differs with circumstances, and the determination of those circumstances may be the subject of some future paper.

The further treatment of this acid is in every respect the same as has already been described by Prof. Wenzel; but an acid prepared by my method has this great advantage over the one prepared by the former process, that it is already highly concentrated, and requires very little evaporation before the arsenious acid is reduced.

Oxidation of Phosphorous Acid to Phosphoric Acid by means of Bromine. (Bromhydric acid as by-product.)

The product of the slow aerial oxidation of phosphorus contains about 1 molecule of phosphorous acid to 4 molecules of phosphoric acid, and, besides these, some impurities, such as arsenious acid and others, mostly derived from the phosphorus. Of these impurities the arsenious acid is particularly objectionable and must be removed before the process of oxidizing is entered upon. The removal of the arsenic, as has been described in the foregoing ("The Manufacture of Phosphoric Acid from Phosphorus"), is best effected by heating the acid to 190° C., subsequent diluting and filtering, after which the acid is ready to be oxidized. Heretofore nitric acid has been the only substance employed for this purpose, but since the price of bromine has become so low (about 35 cents per lb., in 5 lb. bottles) that its cost is no longer prohibitory to its employment in the industries, and, furthermore, since the value of hydrobromic acid has been recognized both in analytical chemistry as well as in therapeutics—it may prove advantageous to substitute bromine for nitric acid in the oxidation of phosphorous to phosphoric acid.

From the equation (see foot note) it will be seen that it requires nearly 2 parts of bromine to every 1 part of phosphorous acid. But the total acidity of the mixture of phosphorous and the phosphoric acids, when of a sp. gr. of 1.48, is about 66 per cent, the composition of which approximates the proportion of 1 molecule (or 12%) of H_3PO_3 to 4 molecules (or 54%) H_3PO_4 . To convert the 12% of phosphorous acid into phosphoric acid would require theoretically $2 \times 12 = 24\%$ of Br. This result agrees very closely with that obtained in practice where it was found that with an acid of a sp. gr. of about 1.48 there was needed a little over one-fourth of its weight of Br to complete its oxidation. This operation may be performed after the arsenic has been removed, either in a bottle containing the acid and Br by shaking this mixture from time to time—it must, however, not be shaken too often, nor too much at one time, since a considerable amount of heat is liberated by the reaction, which may easily reach the boiling point of Br, 65° C.—or it may be accomplished more rapidly by pouring the two substances into a retort and keeping the mixture agitated by slowly passing air through it. In order to prevent any Br vapor, which is carried off by the air, from contaminating the atmosphere of the laboratory, I caused the air which escaped from the retort to pass through two bottles containing a solution of caustic potash. When the mixture is no longer decolorized on standing for about 24 hours, but retains a perma-

nent orange color which is due to an excess of Br, the oxidation may be considered completed. The excess of Br is best removed by the addition of a small portion of the unoxidized mixture of acids, which has been reserved for this purpose.

A still better plan by which the liability of introducing a large excess of Br into the acid is avoided, but which, when carried out at the ordinary temperature of the atmosphere, requires a little longer time than the one last related, consists in pouring the acid to be oxidized into a large wide-mouth glass-stoppered bottle, and the Br into another but smaller glass-stoppered bottle, which will go into the large one. After the open bottle with Br has been inserted into the bottle with acid and the latter closed, the Br gradually evaporates and oxidizes through its vapor, which is absorbed by the acid, the phosphorous to phosphoric acid. When the interior temperature of the apparatus is kept below 25° C., the acid does not consume the

hydric acid, which does not evaporate to any great extent until a temperature of about 125° C. has been reached, begins to distil. The distillation is continued until a temperature of about 180° C. is reached, when the fire is extinguished and the receiver with bromhydric acid detached. The retort and its contents are allowed to stand till cold, when a quantity of water equal to about one-third of the bulk of the contents is poured into the retort. Heat is then again applied, and the distillation continued until the temperature within the retort has reached the same height as before. This second distillation serves to remove a portion of bromhydric acid which cannot be removed in the first distillation.

The phosphoric acid, which forms the residue in the retort, is a black, syrupy liquid, which, however, after dilution with water, digestion with about 1% of purified animal charcoal, and subsequent filtration through white filtering paper (best the brand known as "Chlorine paper"), becomes perfectly colorless.

The black color of the phosphoric acid is due to an organic impurity of the commercial Br, which, it is said, is derived from the luting of the stills, in the composition of which tar is used.

The bromhydric acid, which has been distilled over, requires to be re-distilled, before it can be considered sufficiently pure for pharmaceutical purposes.

If the addition of Br is made to an acid, from which the arsenic has not been removed, the entire amount of arsenic will distil over with the bromhydric acid, while the phosphoric acid will be found free from arsenic.

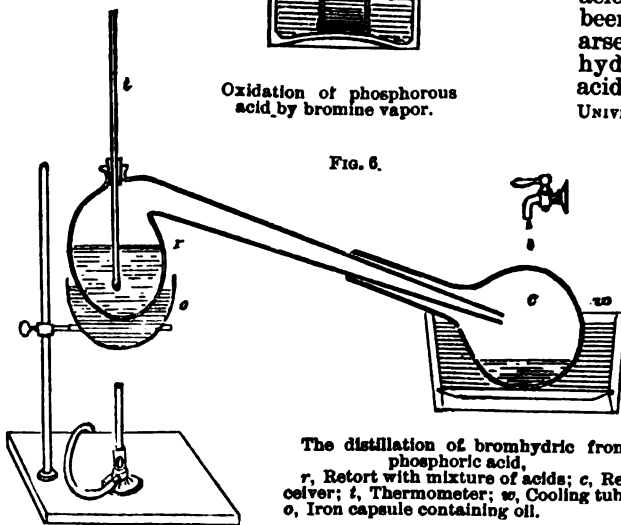
UNIVERSITY OF CALIFORNIA,
BERKELEY, CAL.

FIG. 5.



Oxidation of phosphorous acid by bromine vapor.

FIG. 6.



The distillation of bromhydric from phosphoric acid.
r, Retort with mixture of acids; c, Receiver; t, Thermometer; w, Cooling tube; o, Iron capsule containing oil.

Br as rapidly as it evaporates, and therefore is under these conditions always dark orange colored, unless the supply of Br vapor is shut off by closing the Br bottle, whereupon the color of the acid disappears within 24 hours.

But when the apparatus is kept in a moderately warm place, where the reducing power of the phosphorous acid is so much increased that the mixture of acids remains colorless, or acquires only a light orange color, so long as any phosphorous acid is left unoxidized. But as soon as this acid has disappeared, the liquid assumes a dark orange color, when the bottle with Br is to be lifted out, closed, and kept for the next operation.

There remains then only the separation of the bromhydric acid from the phosphoric acid, which is accomplished by distillation in a retort from an oil bath. The precautions which have been pointed out in a previous article on the manufacture of bromhydric acid, in regard to its liability to decomposition by organic substances, have to be observed here. The mere insertion of the neck of the retort into a well-cooled receiver is sufficient. Neither luting nor rubber connections are necessary. The first portion which comes over consists principally of water (and Br, if this has not been removed in the manner stated above), and should be withdrawn before the brom-

Continuous Administration of Nitrous Oxide.

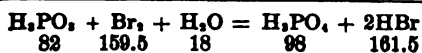
In 1881, Dr. S. Klikovitch, of St. Petersburg, following the suggestion of Dr. Paul Bert, of Paris, made some experiments on himself, with a mixture of nitrous oxide and oxygen, in the proportion of 80 to 20, without any increase of atmospheric pressure, with a satisfactory result. He also used it for alleviating the pains of labor, and found it very successful and perfectly safe; the great objections to it being its expense, and the cumbersome nature of the required apparatus. Some months ago Professor Zweifel, of Erlangen, erected the necessary apparatus for the supply of the mixed gases to the accouchement-ward of his obstetric clinic. He finds it best to administer the gases continuously during the latter part of labor, when the pains are most severe, not, as was practised by Klikovitch, merely giving the gases when signs of an approaching pain appeared. Though this treatment has been adopted in sixty cases, no retardation of the process was ever observed. The patients were generally semi-conscious; so that though they would answer if asked a question, they felt no pain, and were unaware when the child was born.—*British Med. Journ.*

To Administer Paraldehyde.

WM. CRAIG, M.D., in *Brit. Med. Journ.*, gives:

R Pulv. Tragacanth Comp. (Br.)...gr. xx.
Syr. Aurantii.....f 3 iv.
Paraldehydi.....f 3 i.
Sp. Chloroformi.....m xv.
Aque.....q. s. ad f 3 iij.

M. To be given at bedtime in a single dose.—*Phila. Med. Times.*

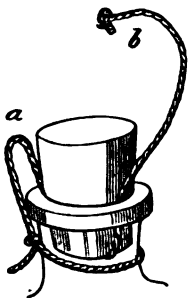


HAYWARD'S CORK-PULLER.

JOHN W. HAYWARD, of St. John's, Newfoundland, is the inventor of an appliance for drawing corks, which makes it as easy to get a cork out of a bottle as it is to drive it in. An ordinary cork, O, of the required size, has a piece of strong non-corrosive twine, 1, let into its sides. A button or shield, 5, also non-corrosive, is placed on the inner end of the cork to prevent the twine cutting through it. A hand metal tag, 2, is secured on the twine where it is knotted, or in case a capsule is placed on the end of a piece, 4, which hangs below the capsule.

A rubber button, 3, placed on the outer end of the cork, has a hole or slit through which the twine passes. In 6 is shown the wire attached to the

FIG. 2.



bottle neck, 6' representing the hook, and 6" the manner of locking it in place. 7 gives the appearance of a bottle when corked and the twine secured on the wire hooks. In 8, a capsule has been placed over the cork, and the tag is seen protruding beneath its edge. 9 shows the manner of securing the twine over the wire by stretching the elastic button, 3, and 9' the top view of the bottle when the operation is completed.

When the cork is being driven into the bottle, the rubber button is turned over on the twine and tag, as shown in 10, to protect them from injury. The button is then reversed, one loop of the twine passed under the wire hook on one side, and by stretching the rubber button the other loop is secured on the opposite hook. The process of unbottling is shown in our last figure. The tag is grasped, and by an upward twist the capsule is torn open. The twine is disengaged from the wires, and, by passing the first and second fingers through the loop, the cork can be readily drawn. This system does away with the corkscrew entirely, each cork carrying its own means of release. It is applicable for any liquids, medicines, liquors, inks, etc., and as the corks are not injured they may be used a number of times.—*Scientific American*.

[It is by no means necessary to resort to so intricate a device as the one just described, to accomplish the purpose of getting out a cork without the intervention of a corkscrew. A piece of small but strong twine is all that is essential, and two (of several) modes of using it are shown.

In Figure 2, one end of the twine having been tied about the neck of the bottle, the twine is laid across the centre of the opening, allowing a little slack towards the end that is fast (a). The cork having a notch cut across its lower face to prevent the twine slipping, is then pushed into the neck of the bottle, and the free end of the twine (b) will serve as a means for drawing the cork out.

A second, Figure 3, which is a little more elaborate, consists in first tying a loop, a, by means of which to attach a label, or to serve for hanging the bottle up out of the way of children, etc., then tying the ends together at b, so as to encircle the neck, cutting one of the ends short, and tying the other

tightly around the cork in the manner shown. This method serves not only to furnish a cork-drawer, but prevents the cork being lost. Either method is especially useful in the case of medicine bottles for travellers.—ED. AMER. DRUGGIST.]

Sponges for Surgeons.

MR. LAWSON TAIT'S method of preparing sponges is as follows: New sponges are first put into a large quantity of water with sufficient muriatic acid to make the water taste disagreeably acid. They remain in this mixture until all effervescence has ceased and all the chalk is removed. For this purpose it may be necessary to renew the acid several times. The sponges are afterward carefully and thoroughly washed, to make them as clean as possible and free from every rough particle. After being used at an operation, they are first washed free from blood, and then put in a deep jar and covered with soda and water (one pound of soda to twelve sponges). They are left in this about twenty-four hours (or longer if the sponges are very dirty) and then they are washed perfectly free from every trace of soda. This takes several hours' hard work, using hot water, squeezing the sponges in and out of the water and changing the water constantly. Leaving them to soak for a few hours in very hot water greatly assists in the cleansing. When quite clean, they are put in a jar of fresh water containing about one per cent of carbolic acid; after being kept in this way for twenty-four hours they are squeezed dry and tied up in a white cotton bag, in which they are left hanging from the kitchen ceiling till they are wanted.—*Amer. Journ. of Obstet.*

Enveloping Paper.

PROF. VAN DER BERG, of Holland, after a series of experiments which it

FIG. 1.



Hayward's cork-puller.

would take a pamphlet of some hundred pages to describe, found that paraffin paper is decidedly superior to all other kinds of wrappers actually in use, in preventing loss of weight, flavor and aroma from contained medicaments and pharmaceutical products in general. Next to paraffin paper came ordinary note paper (writing paper), then parchment paper, and lastly filtering and blotting papers. Doubtless if the paraffin employed has been previously made to dissolve about 1% of salicylic acid a still superior result will be obtained, insuring the absence of mould or mildew.—*Chemist and Druggist*.

Egg-Julep for the Hair (Piesse).

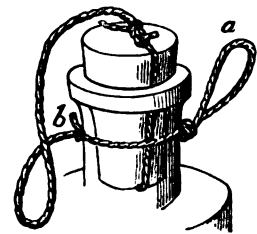
Rectified Spirit..... 1 pint.
Rose-Water..... 1 gallon.
Extract of Rondeletia ½ pint.
Transparent Soap..... ½ oz.
Hay Saffron..... ½ drachm.

Shave the soap very fine, boil it and the saffron in a quart of the rose water; when dissolved, add the remainder of the water, then the spirit, finally the rondeletia, which is used by way of perfume. After standing two or three days, it is fit for bottling.—*Chemist and Druggist*.

For Toothache.

B Acetate Lead..... gr. x.
Distilled Water..... f. 3 ss.
Tr. Opium..... f. 3 i.
M.

FIG. 3.



Apply to the hollow tooth with absorbent cotton.—*Med. Age*.

Tooth-paste.

Precipitated Chalk..... 3 oz.
Carbonate of Magnesia... 1 "
Powdered Soap..... ½ "
Glycerin..... ½ "
Oil of Neroli..... 10 drops.
Syrup of Orange Flower, q. s.

—*Chemist and Druggist*.

Application for Neuralgia.

Chloral Hyd..... 0.50 gr.
Menthol..... 0.50 "
Cacao Butter..... 1. "
Spermaceti..... 2. "

M. Make into a cone-shaped mass.—*Phil. Med. Times*.

Mucilage.

T. W. WATKINS states that a mucilage of acacia, which will not spoil, may be made as follows:

Oil of Gaultheria..... ʒ. xv.
Calcium Phosphate.... sufficient.
Water..... ʒ. viij.
Acacia..... ʒ. iv.

[Triturate the oil of gaultheria with about one drachm of the phosphate of calcium and afterwards the water, and filter. Then use the filtrate to make a mucilage with the acacia.]—*Therapeutic Gazette*.

Himrod's Asthma Cure.

STEARNS' *New Idea* said it can be imitated by a coarsely-ground mixture of stramonium leaves and lavender flowers, with a little benzoin, the whole sprinkled with sufficient saturated solution of nitrate and chlorate of potassium to make the powder burn well; the patient to inhale the fumes. Another formula given by a correspondent of the *Druggist's Circular* recommends equal weights of powdered lobelia, stramonium, black tea, and nitrate of potash, well mixed and sifted. Dr. Morell Mackenzie soon afterwards published some lectures on "Hay Fever," and quoted the last formula, saying the addition of a little aniseed or fennel would make a compound which, in appearance and effect, is very similar to Himrod's remedy. He could not trace any tea in the original by microscopical examination, but he seemed to think it was a desirable addition. A French formula recommends stramonium and sage. The proprietor of the formula has denied that any of those published are correct.

Varnish for Labels.

Sandarac.....	150 parts
Mastic.....	50 "
Venice turpentine.....	15 "
Alcohol.....	800 "

Macerate, with repeated stirring, until solution is effected. Then filter, and add enough

Alcohol to make.....1,000 parts.

Paper labels are first sized with diluted mucilage, then dried, and then coated with this varnish. If the labels have been written with water-soluble inks or color, they are first coated with two coats of collodion, and then varnished.—EUGEN DIETRICH in *Central-halle*, No. 41.

Artificial Gutta-Percha.

50 KILOGRAMMES of copal resin, and 7½ to 15 kilogrammes of pulverized sulphur, are mixed with double the quantity of oil of turpentine, or with 55 to 66 liters of petroleum oil, in a tank which contains an agitator, and the mixture is then heated to a temperature which may vary from 122° to 150° Centigrade, the whole being stirred until complete solution is effected. The mass thus obtained is then cooled down to about 38°, and a solution of casein added which contains about 3 kilogrammes of casein, dissolved in weak ammonia water and a little methylated spirit. The whole is then again heated to between 122° and 150° until it assumes a thin consistence, when it is caused to boil with a solution of tannic acid, containing 15 to 25 per cent of tannic acid and about ½ kilogramme of ammonia.—M. ZINGLER, *Monthly Mag. of Phar.*, etc.

Explosive Drugs.

A LIST has been recently published, in the *Union Pharmaceutique*, of accidents which have recently occurred during the preparation or carriage of explosive substances used in medicine. At Strassburg, a chemist's assistant was changing some *lycopodium*-powder from one bottle to another; the particles that escaped mixed with the air, a jet of gas was burning, and a slight explosion occurred. The frightened assistant dropped the jar containing the *lycopodium*, the room was at once filled with the powder, and a violent explosion took place. M. Meyet has stated that a tooth-powder composed of *chlorate of potassium* and cachou has been known to explode in the mouth of a person engaged in brushing his teeth. A druggist who dried some *hypophosphite of calcium* in a receptacle containing sand was killed by its explosion. *Oxalate* and *citrate of calcium* are also explosive, but only at a high temperature. Pills of *permanganate of potassium* have been known to explode spontaneously. A mixture of *chlorate of potassium*, *chloride of iron*, and *glycerin* exploded in the pocket of a patient who carried it. An eminent chemist at Paris prepared ozone with powders composed of equal parts of *peroxide of manganese*, *permanganate of potassium*, and *pulverized oxalic acid*. He took every recognized precaution, and the mixture was corked up in a bottle; a few minutes afterwards an explosion took place, and the bottle was reduced to atoms.—*Med. and Surg. Reporter*.

Insolation of Olive Oil.

L. MOSHINI says that when olive oil is exposed to sunlight for the space of a month it is permanently bleached. Its specific gravity is not found to have altered. When oil which has been thus exposed to the sun is afterwards treated with sulphuric acid of 1.63 sp. gr. in the usual manner, it does not turn green as ordinary olive oil does, but only takes a reddish-yellow tinge. With nitric acid or soda it becomes whitish, and not green or pale yellow.

These two tests can therefore no longer be utilized to recognize it. On the other hand, olive oil which has been exposed to the sun for a month, concretes into a solid mass as before under the influence of nitrous vapor, but the author assures us that even this property of the oil disappears if the insolation be carried far enough; for instance, if it be carried on for three or four months in wide, open vessels.

The insolated oil is acid to test papers; moreover it is found to have contracted a rancid taste and odor; it possesses the property also of dissolving aniline red, as certain sophisticated samples of olive oil are found to do likewise. The action of light on oils may find some further useful applications. Oiled papers are again coming into use in photography, and calico-printers may probably find new uses for insolated oils.—*Mon. Mag. of Phar.*, etc.

[Insolated olive oil may have some trade uses, but that which is to be employed for the table or medicinally, should be carefully protected from sun-light for even a very short time, if it is desired to retain its flavor.—ED. AM. DRUGGIST.]

Chrysophanic Acid of Rhubarb.

ACCORDING to Dr. Kubli, chrysophanic acid is first formed in rhubarb root, upon digestion of the latter in water, and none of this acid pre-exists in the more important kinds of rhubarb. Its formation is due to decomposition of the substance known as chrysophan, which does exist in the root. This decomposition is due to a ferment which is soluble in water, but not in alcohol. It is for this reason that an *alcoholic extract* of the root can be evaporated without decomposition, because while chrysophan will be contained in it, the ferment will not. We can thus explain also why *extract of rhubarb* prepared with dilute spirit will deposit from time to time a yellow precipitate, which consists, according to Clark, chiefly of chrysophanic acid. Chrysophanic acid, which is largely used as ointment in skin diseases, has been recently shown to possess strongly antiseptic properties, to which rhubarb probably owes its beneficial action in catarrh of the stomach, indigestion, etc.—*Mon. Mag. of Phar.*, etc.

Distillation of Oil of Star-anise.

ACCORDING to a report made to Schimmel & Co., of Leipzig, oil of star-anise is distilled, in Annam, in the following manner:

Ten kilogrammes of fresh, green star-anise fruits are put into an iron boiler of about 27 inches diameter and enough water added to nearly fill it. Another similar iron vessel is then turned upside down over it. The latter has a hole, about 12 inches wide, in the bottom and upon this is placed an earthen vessel surrounded by an iron frame in which cold water circulates to condense the vapors ascending into the vessel. The condensed liquid is conducted from the latter by means of a bamboo into tinned receptacles, where the oil rises to the surface. One distillation lasts two days. The 10 kilos. of star-anise yield 250 Gm. of oil [this is about 2½ per cent]. A single stiller—and there are many of these—annually produces 150 to 180 kilos. It is principally prepared in and about Lang-son, Ki-lun, Dong-Dang, and Hanoi in Annam, and is brought to market in Luong-Chan (China), packed in the well-known cans. Before the French occupation of Hanoi and Bac-ninh, a portion of the yearly product found its way to Tonquin by way of these two cities. Since then, however, the Chinese dealers have acquired the monopoly of the trade. The manufac-

ture is reported to be subject to a tax, levied by the tuam-phu, who owns the distilling apparatus, and, at the same time, large plantations of star-anise in the province of Lang-son.

On the Feeble Stability of Salicylates.

DR. G. VULPIUS directs attention to the fact, already brought forward previously by others, that the peculiar antizymotic or antiseptic property of free salicylic acid is obliterated when the latter is neutralized by bases.

He made a series of parallel experiments with 1 per cent solutions of the salicylates and the sulphates of ammonium, magnesium, copper, zinc, atropine, morphine, physostigmine, and pilocarpine. In the case of the sulphates, two sets of experiments were made, one in which the sulphates alone were used, and the other in which they were treated with 0.1 per cent of free salicylic acid. All of the latter (sulphates containing free salicylic acid) remained absolutely unaltered after 100 days; the solutions of the pure sulphates, with the exception of one scarcely turbid sample, were likewise unchanged. But nearly all the solutions of the pure salicylates were spoiled already after a few weeks.

Dr. Vulpius remarks, very properly, that the choice of a salicylate is not always occasioned by the desire to select a salt which could not spoil. In the case of the salicylate of physostigmine, for instance, the reason why this salt is preferred is this, that it is in distinct, dry, and non-deliquescent crystals, and does not cake. So far as the keeping qualities of solutions are concerned, however, the sulphates are greatly preferable to the salicylates. *Arch. der Pharm.*, 1885, 794.

Pills of Permanganate of Potassium.

E. A. PATCH says: "After experimenting with the various excipients that have been suggested, I would recommend one of the following:

"*First*. Resin cerate, in proportion varied according to the size of the mass, from 15 to 20% of the finely powdered permanganate used. Five grains will make a mass with 25 grains of the salt; 15 grains will make a mass with 100 grains of the salt.

"*Second*. One part of permanganate, 1½ parts of kaolin (the clay used for making white porcelain), and water, q. s. The amount of water will vary from ¼ to ½ of a part.

"*Third*. Permanganate, 2 parts; kaolin, 1 part; and petrolatum, q. s." The amount of petrolatum required depends upon its consistence. He finds that 4 grains, with 24 grains of permanganate and 12 grains of kaolin, makes a mass somewhat more plastic than No. 1, and decidedly more so than No. 2.

No. 2 disintegrates most rapidly in contact with water, and No. 1 the least rapidly.—*The Pharmacist*.

Preparation of Buxine.

THE active principle of *Buxus sempervirens*, known as buxine, and found to be identical with bebeerine of Nectandra, and pelosine of Pareira, was described in 1854 by Couerbe as a non-crystalline mass, having a very bitter taste and causing a person to sneeze. Buxine turns litmus paper blue, is very soluble in alcohol, less so in ether, and almost insoluble in water. Nitric acid decomposes it. Couerbe prepared it by boiling with magnesia a watery solution of an alcoholic extract of box, dissolving the resulting precipitate in alcohol, decolorizing the tincture with animal charcoal, filtering and evaporating. The salts prepared with this buxine are very bitter, and yield with alkalis a gelatinous precipitate. The sulphate forms crystalline grains, and, when freed from resinous matters by

treatment with a little nitric acid, gives, upon decomposition by an alkali, buxine that is susceptible of crystallizing. The Italian chemist Barbaglia gave another process for preparing buxine about the middle of the year 1871. He takes the leaves and

stalks of the box tree and treats them with dilute sulphuric acid in the usual manner. The acid solution is precipitated by excess of carbonate of soda or carbonate of lime; the precipitate is collected and dried at a very moderate temperature. It need not be

absolutely dry. It is now acted on by absolute alcohol. The latter is withdrawn by distillation, and the residue again submitted to the action of dilute sulphuric acid. This second acid liquid is also precipitated by an excess of carbonate of soda or carbonate of lime



A SPANISH PHARMACY OF THE LAST CENTURY. (See page 10.)

at a temperature of 40° to 50° C. A current of carbonic acid gas is then passed into the liquid, which redissolves the buxine as bicarbonate, and separates a resinous substance. The solution of *bicarbonate of buxine* is neutralized by ammonia, which sepa-

rates the pure buxine in a perfectly white condition. Box grows spontaneously in Spain, Italy, Switzerland, France, and the south of England. No doubt its febrifuge action is quite as real now as in the days when the emperor Joseph II. gave fifteen hun-

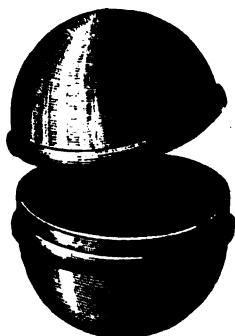
dred florins to find it out; and some French practitioners still prescribe it in the form of the powdered leaves, thirty to forty grains being given in an appropriate vehicle at the commencement of an attack of ague.—*Chemist and Druggist*.

NOTES ON PRACTICAL PHARMACY.*

[Continued from Dec. No., p. 204.]

GILDING, SILVERING, DUSTING, SUGAR-COATING, GELATINIZING, AND GLAZING PILLS.

GILDING and silvering pills (*obduere foliis auri, argenti*) is done by means of leaf-gold or leaf-silver, in a spherical capsule, divided into two parts, composed either of glass, porcelain, wood with porcelain lining, wood, or horn. If such a capsule is not at hand, a little porcelain pipkin will subserve its purposes. Several pledgets of foil having been cut off with shears, are placed in one-half of the capsule, and six or eight freshly rolled pills, made of as hard a mass as is obtainable, are then dropped in, the capsule is closed, and vigorously shaken. The pills, now covered with a glittering metallic coating, must then be freed (by shaking) from such particles of foil as may be still freely adhering. Some pills take a slight coating of metal or even none at all. In such cases the pills must be taken out of the capsule and rolled about in a circle with the palm of the hand (or with a roller) on a sheet of clean, smooth writing-paper, or on the plate of the finisher, which has been very slightly rubbed over with a few drops of mucilage until they are uniformly moistened. Instead of the slight moisture with the gum mucilage, the pills may be placed in a tea-sieve,



Capsule for Silvering Pills.

or in the little pill-sieve described on page 201 of our last volume, and held for a moment in the steam of boiling water. The pills should then be placed in the capsule and shaken. After this has been done, the silvering or gilding must be repeated again and again. It is an offence against the rules both of decency and cleanliness, to breathe on the pills for the purpose of making the metal adhere. The moistening of the pills by means of the gum mucilage is always recommendable, whenever the dispenser wishes to make a point of supplying pills with a very handsome metallic covering. The more compact the pill-mass, the more enduring will be the metallic coating. Pills containing *asafoetida*, and especially *sulphur* and sulphides, such as sulphide of mercury, antimony, etc., should always be made from a solid pill-mass, if they are to be silvered or gilded.

[The *Chem. and Drugg. Diary* gives the following useful hints: In order to silver pills over a tolu varnish, moisten with weak liq. potassæ, instead of mucilage. The mucilage will not always adhere to the resinous surface. One leaf of silver covers six five-grain pills. One drop of weak mucilage is sufficient to dampen a dozen such pills, and they should have a dull, not

a glistening, appearance when thrown on the silver. The wetter the pills are the more silver leaf is required, and the finish is not so good. If any powder be used in rolling out a pill which is to be silvered it should be licorice. Should any lycopodium be used it will be impossible to get a well-silvered pill. Before finally polishing the pills expose them to the air for a few minutes, then add an extra silver leaf, and finish off. This assists very much in giving a brilliant coating.]

As a usual thing, the sulphides of antimony and the sulphides of mercury do not at first exercise any special influence on the metallic coating of the pills, but a few days later they become black. On account of this change, the following procedure should be observed. The pills containing the sulphides should be made of the hardest pill-mass obtainable, and their surfaces dried in a moderately warm place for several hours, then coated with collodion (see below), moistened with mucilage and either gilt or silvered.

Separate capsules or boxes must be kept for silvering or gilding pills. A small one is used for the latter purpose. Most of those in common use are made of horn.

Conspurgent Powder.—To prevent pills, which are not to be covered with a metallic coating, from sticking together, a conspurgent powder is used. If none is specified by the physician, *lycopodium* is used. The quantity employed should not be larger than is required to form a very thin layer in the box or vial destined for the pills. If the pills are soft or contain hygroscopic ingredients, enough of the powder must be taken to absorb all superficial moisture and to remain slightly in excess.

SUGAR-COATED PILLS.

These are prepared in the following manner. The pills, when made, are partially dried, then moistened with mucilage and at once thrown into a finely-powdered mixture of equal parts of sugar and starch, contained in a capsule, and the latter agitated with rotation. A firmer coating is obtained in the following manner. One part of white gelatin is first dissolved in 4 parts of distilled water, with the aid of the water-bath. Then a mixture is made of 20 parts of sugar, 10 parts of starch, and 5 parts of tragacanth, which must be brought to the state of an impalpable powder. About 2 heaped teaspoonfuls of this powder are placed into a round box, such as is used for silvering pills, about 25 drops of the warm gelatin solution are then added, and then about 50 pills, which must have been superficially dried in a moderately warm place, and coated with the gelatin solution just previously to being put in the box. The latter must be immediately agitated with a circular rotation for about three minutes, when the contents of the box are emptied out upon a small sieve. The pills, separated from the powder, are then agitated in the box for about three minutes longer, in order that their surface may become smooth. Should the coating be so thin that the color of the pill-mass is still visible, a second coating may be applied, after the first one has become thoroughly hard and dry. When pills are coated with syrup (instead of gelatin solution), and a mixture of gum arabic and sugar, the coating is rather thick and rough, and not sufficiently firm. The above-mentioned mixture may be colored or aromatized, as it may be required.

Another method of sugar-coating pills is the following: Moisten the pills with a mixture of 1 part of glycerin and 2 parts of alcohol, and put them into a box containing a very finely-powdered mixture of 20 parts of sugar,

3 parts of arrow-root and 1 part of mastic. Then agitate immediately and energetically. Sometimes 1 or 2 parts of mastic are dissolved in the alcoholic solution of glycerin.

[Other modes of sugar-coating pills, taken from the *Chem. and Drugg. Diary*, are the following:

Albumin and Sugar.—Pills sufficiently firm and dry should be rolled between the finger and thumb, with enough white of egg to give them a thin coating. They should then be placed with finely-powdered white sugar in a suitable vessel and rotated. The coating looks well and has a pleasant taste.

French Chalk and Sugar.—The pills are moistened with syrup or mucilage, or a mixture of the two, by shaking in a covered pot. They are then transferred to a box containing powdered French chalk or a mixture of French chalk and sugar, and are well shaken, and again transferred to a warm pill-tray and kept rapidly rotating until dry and smooth. The operation takes but little time.

Mucilage of acacia and syrup, of each 3i., water 3vi., form a good moistening mixture.

Tragacanth and Sugar.—Recommended by M. Calland for pills containing essential oils. Mix 1 part of powdered tragacanth with 2 of water; press the mixture through muslin, add 20 parts powdered sugar of milk and dry in a thin layer on a porcelain slab. Finally reduce it to a very fine powder. Dr. Symes says that this is not easily done, but the success of the coating depends on the fineness of the powder. The pills are moistened with water and rolled in the powder, a rotary motion being kept up till they are dry.

Pearl-coated and Tolu-coated Pills are thus prepared, according to the *Chem. and Drugg. Diary*.

Pearl-coated Pills.—A popular form of coating pills in recent years is known as pearl-coating. The powder used in this case is generally plain French chalk, or a mixture of French chalk with fine powdered sugar. In pearl-coating, as also in sugar-coating and silver-coating, the following points must be attended to to insure success, namely, the pills must be sufficiently dry and hard to prevent interstitial moisture exuding, and so spoiling the coating; they must be evenly but not excessively damped with thin mucilage; and lastly, they must be thoroughly rotated, first in the powder and afterwards without any free powder, to produce a brilliant surface.

Prescriptions are now frequently met with in which one or two dozen pills are ordered to be made and enameled, or pearl-coated. By the following process a perfectly finished pearl-coated pill may be turned out in a few minutes. Shake the pills which should be fairly hard and well rounded, in a chip pill-box with sandarach and ether, varnish and throw them into very fine French chalk, rotate for a minute, and separate excess of powder. Shake the pills in another chip box with a mixture of equal parts of whipped white of egg (strained), syrup and water, sufficient to thoroughly wet the pills, and throw them into excess of very fine French chalk, shake for a minute, remove the pills to a flat marble slab, and rotate very lightly under a pill-finisher, sprinkling on a very little chalk until a smooth surface is produced. If time permits, they should be exposed to the air in a tray to dry thoroughly.

Tolu- (and Chalk-) coated Pills.—This was introduced by Dr. Symes in 1860. The resin left after making syrup of tolu is dissolved in ether, sp. gr. .717 to .720. The pills are rolled in this, and while still moist are transferred to a box containing finely-powdered French chalk, then turned into a warm pill-tray and kept rotating for

*The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

a short time. Finally polish with slight pressure under the pill-finisher. The result is a steel-gray smooth coating.]

GELATIN-COATING OF PILLS.

Pills which are to be coated with gelatin must be thoroughly dried. [This is not the case. They need only be partially dried for this purpose, and this is just one of the advantages of the process, inasmuch as gelatin-coated pills, if properly prepared, will remain soft and soluble for a longer time than sugar-coated ones, in which the pill-mass has been most thoroughly dried. As a rule, it is necessary to render pills, that are to be sugar-coated, perfectly dry. Yet, careful manufacturers adjust the constituents and excipients so that they will nevertheless remain quite soluble. Years ago it was common to find sugar-coated pills in the market which were almost entirely insoluble. In these days, when manufacturers vie with each other in turning out readily soluble pills, it is difficult to find any that are affected with the former drawback.]

The gelatin solution [according to Dr. Hager] is prepared from 2 parts of white gelatin and 5 parts of distilled water, with the aid of a water-bath. If such a solution is to be kept in stock, it is prepared from 10 parts of white gelatin and 25 parts of water, to which are added 6 parts of alcohol of 90 per cent. When cold, this mixture forms a solid jelly. For use, a portion of it is warmed on a water-bath, the single pills, one after another, stuck upon a pointed wire and dipped into the gelatin solution so that the wire is not touched thereby. The pill is then removed, turned several times around its axis, and the wire then placed, with its free end, into a pin-cushion. A sewing needle may also be used, the pointed end being stuck in the pill and the eye-end being afterwards inserted into a piece of bread. When the pills are all coated, they are taken off the wires and put into a tin box. [The little orifice which the wire or needle has left may be closed by applying a minute portion of the gelatin-mass by hand.] A more expeditious process is the following: Into a warm porcelain capsule pour about 30 drops of the warm gelatin solution, then add 60 pills, shake them about until they are all moistened, and distribute them as quickly as possible upon wax-paper and let them dry two hours, etc.

This operation should be performed as quickly as possible, and the pills must not be moistened with an excess of gum-solution, and the services of an assistant will be needed to separate the pills rapidly on a piece of waxed paper to prevent their touching each other, and finally, they must not be collected from the waxed or paraffined paper until they are thoroughly dried, which will be at the expiration of about an hour and a half. They may then be loosened by the slightest touch.*

The LACQUERING OF PILLS is done with pill-laquer, *lacca ad pilulas, vernix pilularum*, which is prepared by the maceration and filtration of 5.0 powder mastic, 15.0 balsam of Tolu, 25.0 absolute alcohol, and 80 ether. The cinnamonic and benzoic acids contained in this solution sometimes cause the appearance of white spots, for which reason preference is given to the following formula: 15.0 grammes of balsam of Tolu are placed in a small glass retort, and about 60.0 grammes of boiling water having been poured over it, the mixture is digested on a water-bath for several hours with occasional shaking. After the hot water has been poured off and entirely drained away, a mix-

ture of 25.0 grammes of absolute alcohol and 80.0 grammes of ether is poured over the residuum, and after being macerated for several days with occasional shaking, it is filtered (poured through plugs of cotton). The pills having been thoroughly dried for 24 hours in a temperature of from 25° to 30° C., are then placed in a capacious flask, well moistened with the laquer, shaken, and immediately spread out on a flat porcelain plate, or in a capsule made of paraffin paper, care being taken that they do not touch each other.

The pills may likewise be stuck on the point of a needle, as in the process of gelatinizing, and dipped into the laquer, the needles being then stuck into disks of bread in order to effect the drying.

Dr. Symes (in the *Chem. and Drugg. Diary*) recommends the following formula: French sheet gelatin, 4 parts; water, 16 parts; glycerin, 1 part: melt with the aid of heat. A board is required into which pins have been pressed, so that the points project some distance, and it is a saving of time to have a corresponding board with a hemispherical depression opposite each pin. The points of the pins are slightly greased, a pill placed on each, any scum is removed from the solution kept warm, the pills are immersed, and a rotary motion, with occasional inversion, is kept up until the gelatin sets.

In the *American Journal of Pharmacy*, Mr. R. H. Dimock has published the results of some experiments in coating pills for dispensing purposes. The best coating he has tried is made by dissolving 6 drachms of Cox's gelatin and 1 drachm of granulated gum arabic in 14 drachms of acetic acid No. 8, with the aid of a water-bath; add 1 ounce of spirit of nitrous ether, and 5 minims of oil of gaultheria, and mix. Make the mass a little softer than usual; use as little powder as possible in rolling out; when the pipe is nearly long enough for cutting, lay in front of it a thread long enough to reach over the sides of the machine, or cut a slit along the pipe, and lay the thread in this. Roll to full length, and cut off the pills, which, with practice, can all be kept strung on the thread; take hold of each end of the thread; shake off any powder adhering to the pills, and dip them into the coating-solution. Twirl the thread to throw off all excess of coating, and hang up to dry, by pinning the opposite ends of the thread to the sides of a box. It requires some practice to secure good and speedy results by this method.]

COATING THE PILLS with *collodion* is readily done by sticking them on the points of fine sewing needles and dipping them into *collodion* (*pitula collodiata*). As this coating dries rapidly, the operation is quickly performed. It should be mentioned that, unless the pills are thoroughly dried beforehand, they will assume a streaky white appearance.



Samples of Bolus.

BOLUS.

The *Bolus* is prepared from a mixture that is rather more plastic than a pill-mass. Its weight for administration to adults varies from 0.25 grammes (4 grains) to 5.0 grammes (80 grains). This form of medicine is employed by physicians only when the dose of badly-tasting medicine is very large, and it is not desirable for the patient to swallow a great many pills at a time. The small bolus is made into a spherical (pill-) shape, the large one in that of a spheroid.

The mode of mixing or preparing the mass from which the bolus is made is similar to that described for making pills. It should be of a pliable consistency, so that the bolus may be shaped into spheres by the fingers. The prescription specifies the number of boli desired. The separation is effected by means of the pill-machine. In case the prescription does not designate the con-spergent, *lycopodium* is employed for the colored boli, and *starch* for the white ones.

GRANULES. DRAGEES.

GRANULES, *granula*, were first introduced to the profession in France, and consist of pills made of sugar, each containing a definite quantity of a powerful medicinal substance, or else small pills of about 0.05 gramme (almost one grain) in weight and coated with sugar. The manufacture of dragees is practicable only on a large scale, but still a skilful dispenser may cover small quantities of pills. Both the smell and taste of the pills are concealed by this process.

They are prepared from little globules of sugar, small sugar-pills, or con-fits of poppy-seeds of which a definite amount by weight is to be taken, moistened with a definite solution of some powerful medicinal substance, the quantity being carefully calculated in proportion to the number of granules, which are then dried and sent to the confectioner who covers the pellets with sugar and starch (sometimes tinged with cochineal), so that they attain the size of pills of from 0.1 to 0.12 grammes (about 1½ grains in weight, and which furthermore are sometimes coated with silver-leaf. Thus the preparation of granules is usually practicable only in the manufacture of one or several kilogrammes.

In case only a few of these granules should be needed, the required number of sugar pellets may be saturated with the medicinal substance, and dried and sugared as described previously.

B Granulorum Morphinae acetatis, 0.001 or $\frac{1}{1000}$ grain each, No. 100.

D. S. Two pellets every three hours.

Count 105 sugar pellets of about the size of a pill of $\frac{1}{4}$ grain weight into a little glass cup, and drop on them repeatedly a warm solution of 0.105 gramme of acetate of morphine in 40 grains of 90 per cent alcohol; after each dropping they must be dried in a moderately warm place. Having been thus impregnated with 0.105 gramme of acetate of morphia, they are sugar-coated once or twice, according to the directions given before. In this process, 105 of the sugar pellets are employed instead of 100, in order that the extra 5 may cover the incidental loss which may be therein incurred. [In turning the quantities above given over into U. S. weights, it is not convenient to make 105 pills, as we would have to weigh $1\frac{1}{4}$ grains which is an odd quantity. It is better to make only 96 pills, for which exactly $1\frac{1}{4}$ grains of acetate of morphine will be required.]

In order to convert pills into granules, they are dried, moistened with gum-mucilage, and shaken with a rotary motion in a capsule (see page 7) with a finely powdered mixture of three parts of sugar and one of starch. This operation should be repeated once or twice at the expiration of every hour, and satisfactory results will be obtained.

Mr. Vomáčka, an experienced pharmacist, gives the following directions for sugar-coating. "The pills, after thorough hardening, are put into a so-called sugar-coating kettle, and agitated in the mass where with they are to be coated. The sugaring-kettle resembles a hollow apple, which is fastened to an oblique axis, and by means of a proper contrivance can be

* For further information upon this subject, see articles in former volumes of the AMERICAN DRUGGIST AND NEW REMEDIES.

so set in motion as to revolve on its own axis over a fire placed beneath.

The pills which are put into the sugaring-kettle should not be consperged, and must be perfectly hardened. They should be made so hot in the kettle that they can hardly be touched, and then the mass with which they are to be coated poured in; if this precaution is not taken, the sugar that is poured in hardens and envelops the pills in lumps. The coating is composed of boiled sugar with a little water and a little rice starch.

At the instant of pouring in the melted sugar mass, the sugaring-kettle must be turned very rapidly in order that the mass may be equally distributed, and this rapid turning is not to be discontinued until such distribution has been perfectly accomplished.

The process is begun by the addition of a very small quantity of the coating, and further additions are made only until the required density of the covering has been attained.

It is advisable for beginners to undertake the preparation of only a small number of pills at a time, and exercise great caution in the addition of the coating over a slow fire while vigorously turning the machine. Especially towards the end of the process the revolutions must be made with great rapidity in order to give the pills a finished, rounded form. The dust adhering to them should then be removed, and a few bits of spermaceti introduced, with rapid rotary motion whereby the pills are given a smooth glistening appearance.

GRANULOIDES, in French *granuloides*, are large granules or small dragees which are prepared in like manner as granules, or given a spheroidal form.

DRAGEES, *Trageæ* or *Tragemata*, are of an oblong or spheroidal form, and of a correspondingly shaped mass of any composition of bolus or pill consistency, as a kernel. The covering of this kernel is a smooth, white or colored layer of sugar prepared by confectioners by a process resembling that of making granules. Their weight varies between 0.5 and 2.5 grammes (8 to 40 grains). In reality dragees are nothing but sugar-coated boli.

[To be continued.]

Scopoline: A new Mydriatic.

ACCORDING to Dr. Pier-d'hoy (*La France Médicale*), scopoline, an alkaloid existing in *Scopolia Japonica*, dilates the pupils more rapidly than atropine. Its action is not only very energetic, but it lasts longer. On the third day, when scopoline has been instilled, the pupils are more dilated than after the instillation of atropine. It appears to have no irritative effects on the conjunctiva, and is a strong antagonist to the action of eserine.—*Therapeutic Gazette*.

Thymol in Menthol Cones.

ACCORDING to a correspondent of the *Pharm. Zeitung*, it is quite a common practice of manufacturers of menthol cones to add to the latter a little thymol. This is done for the purpose of rendering the menthol a little softer and more ready to adhere to the skin. Cones made of pure menthol are very hard and yield but little of their substance when applied to the skin. The quantity of thymol added, however, is probably very small, since menthol, when brought in contact with more than a small proportion of thymol, causes both substances to liquefy.

EXSICCATOR WITH HEATING ARRANGEMENT.

IT is often desirable to expose certain liquids or solids to heat, with exclusion of air, or at least in a confined space. Or, some volatile liquid is to be distilled off from a solution which will finally leave a solid residue, and the latter is of such a nature that it could not be well removed, if a flask or retort be employed for the distillation, for which reason an open capsule would be preferable. In such cases, one of the forms of apparatus devised by Dr. J. Walter, and here described, will be found useful.

Fig. 1 shows an exsiccator, having two tubulures, through which a lead or block-tin pipe passes, which is coiled in such a shape as to adapt itself to the form of the vessel (capsules). Steam is conducted through the pipe,

FIG. 1.

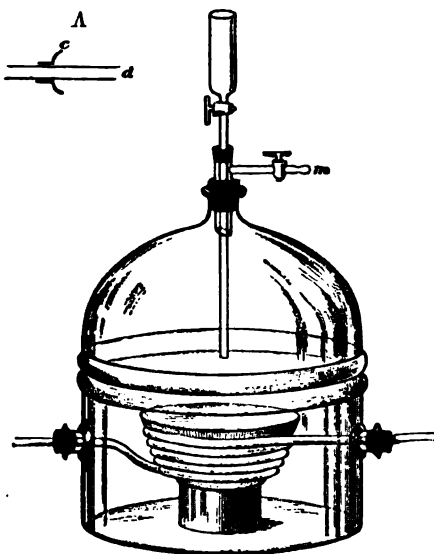
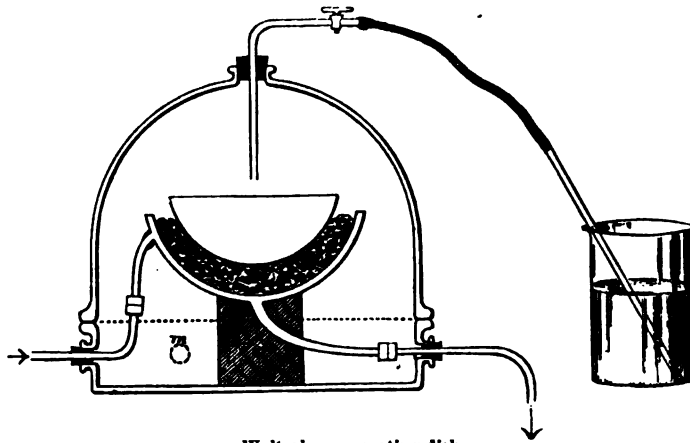


FIG. 2.



Walter's evaporating dish.

and the air is exhausted at *m*. A funnel is fitted through the stopper of the upper tubulure, by means of which the capsule may be refilled. As it is inconvenient to alter the shape of the coil of pipe every time a new capsule is introduced, it is best to interpose a sand-bath, around which the pipe is permanently coiled, and into which the capsule is placed.

In Fig. 2, the steam enters a jacketed copper pan, filled with sand, which acts as a sand-bath. The bell-glass may also be connected with the filter-pump, though this is not shown in the cut. In this case, the capsule may be refilled by opening the stopcock in the bent glass tube entering the top, when the external pressure of the air will cause the liquid in the beaker to pass over.

The author points out that rubber stoppers in contact with hot pipes, soon become soft and leaky. This is particularly the case with lead or tin pipe. It is, therefore, preferable to use separate metallic tubes for passing

through the stoppers. By soldering upon these a semi-globular copper ring, and pressing the sharp edge of the latter (*c* in Fig. 1, A) against the stopper, an additional security against leakage is obtained.

It is, however, best to secure the joints in the same manner as the stuffing-boxes in air-pumps, and to use asbestos as stuffing-material.—*Zeitschr. prakt. Chem.*, 1885, 425.

Hyperembryohydrometrophy is the scientific term which it is proposed to apply to the condition commonly known as "pregnancy." Its advantage as compared with the name formerly used lies in the fact that it sounds better, is unfamiliar to the laity, and its use, like that of the chemical nomenclature of the period, invests the user with the appearance of great wisdom.

Gibier's Pill for Diarrhoea.

Sulphate of Quinine.....	1/2 grain.
Extract of Aconite.....	1/2 "
Tannic Acid.....	1/2 "
Extract of Opium.....	1/2 "
Mucilage of Quince.....	q. s.
Powdered Licorice.....	q. s.

Make one pill.

Escubac.—This French liquor is made as follows:

R Saffron	4
Juniper Berries	4
Dates	2
Raisins	2
Anise Seed.....	1
Coriander.....	1
Cinnamon	2
Mace.....	1
Cloves.....	1
Diluted Alcohol.....	O10

Macerate for two weeks, and filter.

Walnut Hair Dye.

THE juice of the fresh walnut rind has been used from time immemorial as a hair dye. Bernschen and Semper have recently communicated to the Berlin Chemical Society a method of preserving it for use in the shape of a hydroglucoside, prepared as follows: The rinds of the ripe nut are digested in sulphuric ether until their coloring matter is extracted. A solution of chromic acid in water is added to the ether solution, and the mixture thoroughly agitated. The ether is then distilled off, and the residue purified by solution, first in hot ether and afterward in a mixture

of chloroform and petroleum ether, from which latter it is obtained in a crystalline form, as hydrogen glucoside. This substance colors the hair and skin exactly as does the juice of the fresh rind.—*National Druggist*.

To Whiten the Nails.—Mix the following:

Acid sulph. dil.....	2 drachms.
Tinct. myrrh.	1 drachm.
Aq. dest., or spring-water	4 ounces.

First clean with white soap, and then dip the fingers into the mixture. [As a rule, it is not desirable to whiten the nails if the present standard of fashion is to be followed. A pink nail, with a whiter crescent at its base, is, at present, the *sine qua non*.—ED. AM. DRUGGIST.]

To Whiten the Hands.—Mix thoroughly:

Eau de Cologne.....	2 ounces
Lemon juice.....	2 "
Powdered Brown Windsor soap	6 "

When hard, it will be an excellent soap for whitening the hands.—*Pop. Sci. News*.

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EDITORIAL.

DURING the year which has just closed, THE AMERICAN DRUGGIST has contained, exclusive of book-notices, and reading matter on advertising pages, over 965 separate articles and 235 illustrations. 231 queries were answered, and 443 special formulas, laboratory notes, and prescriptions were published; not including those contained in the translation of Hager's *Pharmaceutische Technik*. The last-mentioned article has been continued since 1884 and will be completed in 1886.

A large proportion of the matter has been of a very practical character, the object of the editors having been to furnish the subscribers with information which should be both reliable and capable of application by the retail pharmacist. The translation of Hager's important work, and nearly all of the illustrations with the text relating to them, are to be found in no other pharmaceutical journal in this country.

During the year, a very elaborate series of papers by one of the most competent writers on artistic decorations was published, and the illustrations which accompanied them have not been surpassed by anything that has been published in any periodical devoted to the interests of the drug trade.

Karl von Linne.

THE object of this sketch belongs to the small class of mortals, whose name is destined to be perpetuated in the memory of civilized nations, not merely by treatises of history and in the records of the past, but by its constant occurrence as an intrinsic item of scientific nomenclature. While no monument or statue is required to transmit the record of his merits to posterity, it is but meet that his countrymen should erect a visible and conspicuous memorial in his honor, in the capital

of his fatherland. The monument illustrated on the first page of this number was erected in Stockholm on May 13th, 1885, and is truly worthy, both by its own proportions and general design, as well as by its surroundings, of the object which it represents.*

Karl Linnæus was born on May 13th, 1707, at Rashult in Smaland, Sweden, as the son of a clergyman. Being at first destined to follow his father's profession, he soon developed such a predilection for botanical studies that, after much opposition, his father consented to his studying medicine. He entered the University of Lund, where the botanist Stobæus took great interest in him, and where his attention was first prominently directed to the sexuality of plants by a series of lectures of Vaillant "*De sexu plantarum*" (on the sex of plants). In 1728, Linné went to the other Swedish University at Upsala, and only two years later he succeeded Rudbeck as lecturer on botany, and was intrusted with the superintendence of the botanic garden. About this time he commenced work on his *Bibliotheca botanica* and his *Classes and Genera Plantarum*, while the treasures of Rudbeck's library enabled him to familiarize himself with the domain of zoology, so far as this branch of natural history had at that time been studied and systematized. Having travelled for some time to extend his knowledge by practical observation, he went to Holland in 1735, where he obtained his degree and where he also published, during his three years' residence, his *Systema Naturæ* (in seven volumes; the author lived to see twelve editions of this work, each of which records the gradual advance of science), his *Fundamenta botanica*, and some other works. He then visited England and France and returned to Stockholm where he began the practice of medicine. In 1741 he was appointed professor of medicine, and later, in the same year, professor of botany and natural history in Upsala, the very position for which nature had destined him. He soon re-organized the botanic garden, founded a museum, inaugurated a new system of instruction and was soon surrounded by numerous enthusiastic pupils, many of whom he dispatched to different parts of the world for the purpose of making collections and extending the knowledge of nature. In 1764 he retired to private life, leaving his son as successor at the University. Two years previously he had been raised to the nobility, at which time he altered his family name Linnæus, which he had up to this period always used, to Linné. He died on January 10th, 1778.

An Apothecary's Shop in the XVIII. Century.†

THE collection and preparation of healing remedies was practised in the olden times by the priests.

In the eighth century, pharmacy began, among the Arabs, to be separated from the art curative, and an apothecary's shop was established in Bagdad.

Several decades later, an Arabian physician wrote a pharmacopœia. In the eleventh century, such establishments were also founded in Italy, especially in Salerno, under the name of *stations*, and were subjected to a strict inspection.

In the thirteenth century, there was an apothecaries' society, and in 1224 a tax on curative remedies, and a strict examination of the pharmacists was prescribed touching their knowledge and skilfulness, and physicians were interdicted from keeping such shops. In the fourteenth and fifteenth centuries, apothecaries spread over other lands. They were in France in 1330, in England in 1337, in Prague in 1342,

in Nuremberg in 1404, in Leipsic in 1409, and in Berlin in 1488.

In the eighteenth century, scientific and practical pharmacy improved greatly, and has continued so to do in this present century, through its high degree of development in the progress of the natural sciences.

The French Patent Laws.

"KOLBE has obtained both in Germany and in France a patent for the manufacture of artificial salicylic acid, and has the article made under the patent in both countries. D. B., a dealer in brewers' supplies, of Lille, was sued by Kolbe for importing from Belgium a certain quantity of salicylic acid manufactured in Dresden by D. F. von Heyden, under Kolbe's patent. Thirty-three packages, holding a kilogramme each, were at the same time seized, subject to the order of the court. After a trial in first instance, the case came before the Court of Appeal, which held that: (1) When an inventor has taken for a product two patents, one in France and one in a foreign country, the introduction and sale in France by a third party of the product manufactured by the patentee or his agents, constitutes, on the part of the third party as regards the French patent, an introduction and sale of a counterfeited article in the meaning of the law of July, 1844, article 41. (2) If the importer, owing to lack of guilty knowledge, escapes the consequences of article 41, the confiscation of the product imported must nevertheless be ordered." In its judgment the court refused to grant any damages in favor of Kolbe, but ordered that the thirty-three packages of salicylic acid seized be confiscated and handed to K., as no facts were adduced to prove that he had been privy to the importation of the article into French territory. Another consequence of the judgment should be borne in mind, namely, that, when an inventor takes a patent in France, he must manufacture his article there. If he imports himself some of his own make from England, for instance, he is liable to have it seized and confiscated.—*Chemist and Druggist*.

The Prescribing of ready-Made Physic.

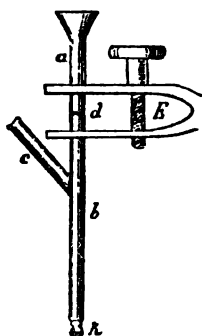
DR. QUAIN, in the Harveian oration recently delivered before the Royal College of Physicians, referred to a matter that has a special interest for pharmacists. Speaking of the prospect of future therapeutical progress he said, "there are one or two points which greatly threaten in practice to interfere with the rational administration of remedies, and which I would desire to condemn, inasmuch as they tend seriously to retard our future. There has grown up a habit of prescribing ready-made physic, of using compounds which contain a variety of drugs, each having different properties—a practice in which there is a mental proclivity to regard the disease as suitable to the physic in hand, rather than to take the trouble to find the remedy that is suitable to the disease. The system is unpractical, unscientific, and least calculated to promote a knowledge of the legitimate use of medicinal agents. In fact the art of writing a rational prescription threatens to become lost. . . . Closely connected with the practice here condemned is that which hastily repudiates remedies on the ground of their failing to fulfil the intentions with which they have been prescribed. A chapter might be written on this subject, which, however, I shall summarize by saying that when these incidents cross my path—as they do that of all of us—I am disposed to fear that my diagnosis and not the drug has been at fault."—*Pharm. Jour*.

*The illustration on page 1 is taken from the *Illustrirte Zeitung*.
† See page 6.

COLLECTING AND WASHING MINUTE QUANTITIES OF PRE- CIPITATES.

It happens sometimes that minute quantities of a precipitate suspended in a liquid are to be separated by filtration, and subsequently to be further examined, perhaps by the microscope. If the liquid were passed through an ordinary, even small filter, some of the precipitate might be difficult of collection after being washed, and it is not always possible, particularly in the case of specifically light substances, to make the particles come together in the point of the filter. In such cases the following expedient is recommended by Dr. K. Haushofer in his *Mikroskopische Reactionen*.*

A glass-tube, having a bore of 4 millimeters (and the glass of which is at least 1 mm. thick) is cut off square, and the two surfaces carefully ground



so as to fit hermetically upon each other. The upper, shorter piece, is expanded into a funnel at the unground end. The other is fitted with a lateral tube *c*, and a glass or cork-stopper *k* is fitted in the lower end. The two pieces may be put together and kept in position by means of a clamp *e*, which is preferably attached to a retort-stand.

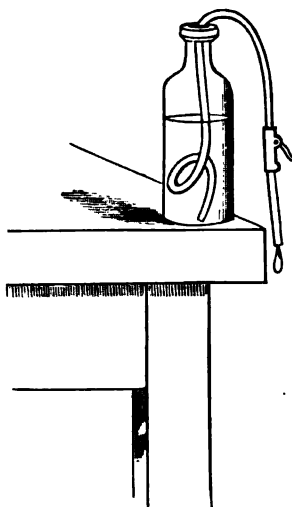
When a small quantity of some liquid containing a precipitate is to be filtered, a small, double disk of pure, moistened filtering-paper is placed between the two ground ends of the glass-tubes, at *d*, so that the paper projects about 1 mm. beyond the glass, the two tubes are carefully pressed together and fixed in this position by the clamp. The stopper is inserted at *k*, and, the liquid to be filtered having been poured into the funnel, suction is applied at *c* by means of a rubber-tube [an intermediate vessel may be used here, to prevent any of the filtrate getting into the mouth]. Filtration proceeds rapidly and effectively (even freshly-precipitated barium sulphate does not pass through the filter in this way), and the precipitate may be thoroughly washed in the same manner. When the liquid has all run off, the clamp is loosened, the upper tube carefully removed, and the precipitate will now be found all collected in the small space covered by the bore of the tube, whence it may be transferred, if necessary, elsewhere.

Preparation of Cocaine.

PROF. A. BIGNON, of Lima, uses the below-described process for the preparation of cocaine. As he himself states, he enjoys an advantage in this, that he is able to work upon comparatively fresh leaves, such as have not yet undergone any material alteration either in color or otherwise since they were gathered. To this fact he ascribes part of the success which attends his method of extracting the alkaloid. He has found that when fresh coca leaves are extracted with benzoin or petroleum, the latter does

not take up more than traces of the coloring matter and other substances which accompany cocaine so commonly when other solvents are employed. His process is as follows:

The coca leaves are soaked in a solution of carbonate of sodium, of 20° B., for about 87 hours [why this odd number of hours is chosen the author does not say; perhaps he means that the leaves are put in soak towards evening of one day and are removed on the morning of the fourth day thereafter. A solution of carbonate of sodium of the strength before mentioned has a spec. gr. of 1.160, and contains about 40 per cent of the crystallized salt]. The leaves are then removed, dried, and packed into a displacement apparatus, where they are covered with light petroleum oils and allowed to remain for 87 hours. The whole of the cocaine that had been set free by the alkali carbonate dissolved in the menstruum, which is allowed to run off. [The author does not mention whether he comminutes the leaves or not, nor whether he adds more menstruum to displace what remains soaked up in the leaves. We should certainly reduce the leaves to a moderately fine powder, and extract them with the menstruum by continuous percolation until they are exhausted.] The separated petroleum solution of cocaine is now mixed and shaken with water containing one-tenth of its weight of hydrochloric acid, which causes the alkaloid to be taken up by the latter. The aqueous and acid solution of the alkaloid is then simply separated, and is very nearly free from other constituents of the coca leaves. The solution having been allowed to become clear by settling and decanted, the alkaloid is precipitated from the clear liquid by the addition of carbonate of sodium. The precipitate, when dried, is nearly pure cocaine, containing about 98 per cent of the latter. [The author evidently considers this product pure enough for medical use, as he gives no further process of purification.]—*Revista Farm.*, Buenos Aires, 1885, 330.



SIPHON AND BURETTE COCKS.

THE contrivance suggested by Dr. A. C. Mercer, the health officer of Syracuse, N. Y., for supplying a fluid in drops, for moistening vaccine points, suggests to us its availability as a stopper for siphons, burettes, etc., used in chemical work. It is simply the form of compression cock of cam shape, supplied with certain forms of fountain syringe, as a means for controlling the discharge of fluid, and is to be found in almost any drug store.

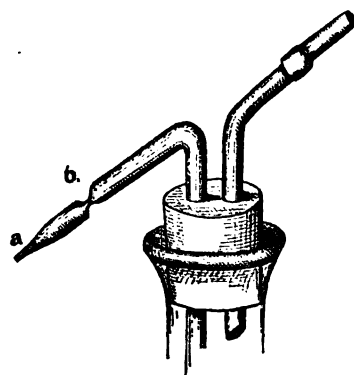
Petrobaseline is the name given by P. Vigier to liquid vaseline or liquid paraffin.

IMPROVED WASH-BOTTLE JET.

DR. G. A. ZIEGELER, of Stralsund, describes his modification of the ordinary wash-bottle jet in No. 40 of the *Pharm. Centralhalle*.

As will be seen from the illustration, he uses a double jet, that is, the delivery tube is contracted at *b* and again contracted to a jet at *a*. This arrangement obviates the forcible ejection of the liquid from the orifice, which often interferes with the precipitate on the filter.

The same author also draws attention to a well-known but not sufficiently employed improvement, namely, the attachment of a piece of rubber tubing to the blow-tube. According to the figure, the author appears to prefer a short piece. We have always provided our wash-bottles with a piece of rubber tubing about four inches long, which permits the bottle being turned in all directions while in use.



Ziegeler's wash-bottle.

Boracic Acid Oil.

C. J. BOND, F.R.C.S., surgeon to the Leicester Infirmary, says (*British Medical Journal*): "I have found that eighteen grains of powdered boracic acid, dissolved in a drachm of hot glycerin, and added to an ounce of olive oil, forms a kind of imperfect emulsion, the glycerin retaining the acid in solution when cold. This can be easily shaken up with the oil. This makes a non-irritating and doubly antiseptic dressing, and extensive burns treated thus, and covered with a layer of antiseptic wool, require to be disturbed but seldom; and, if not perfectly aseptic, are far 'sweeter' than when dressed with, for instance, caron oil."—*Monthly Mag. of Phar.*, etc.

Kuster's Magnesians Bandage.

THIS bandage owes its properties to silicate of potash and carbonate of magnesia, that is, *magnesite*, the carbonate of magnesia found in nature, reduced to a very fine powder. It appears from Mehu's description of it, that when made into a perfect mixture it becomes in the course of twenty-four hours a compact mass as hard as stone. Three parts of silicate of potash to one part of the finely-pulverized magnesia are the proportions used. The magnesia powder is added to the commercial silicate in small quantities at a time, so that the mixture may be made perfectly homogeneous and quite devoid of little lumps. In applying the bandage to a case of fracture, for instance, the limb is first enveloped with a band of flannel; over this are applied bands of linen thoroughly soaked in the mixture of silicate and magnesia. Two linen bandages thus soaked, or at most three, are amply sufficient, and form a solid support that will remain good for a long time. It is stated that this bandage is lighter than the ordinary plaster-of-Paris bandage, that it is more resistant and is cleaner, being less hygroscopic, lasting longer, and that it is cheaper than the latter.—*Mon. Mag. of Phar.*, etc.

* This is the only work so far published specially devoted to chemical analysis under the microscope. The title is: *Mikroskopische Reactionen. Eine Anleitung zur Erkennung verschiedener Elemente und Verbindungen unter dem Mikroskop.* Von Dr. K. Haushofer. 8vo, Braunschweig, 1885.

English Licorice.

THE only important licorice industry in the British Isles is at Pontefract, in Yorkshire. The soil about there is well suited for the growth of the plant, being of a sandy, loamy character, though, it is said, a rich black soil would answer equally as well, the only requisite being considerable depth to allow of the downward growth of the roots. The beds are prepared by being well trenched, the width of trench and bed averaging 3 feet, having the appearance, when finished, of wide celery-beds. Commencing early in April or late in March, a top dressing of good stable-manure is applied, and then lightly covered over, leaving the trench perhaps 6 inches below the level of the raised bed. Buds and suckers, slips or runners are then lightly stuck into the soil by one person, while another follows along with a small spud or (local) dibber, with which holes are made at a distance of some few inches apart, and the buds and suckers inserted therein, say 4 inches below the surface, that is, the tops covered by about 4 inches of soil.

This forms the double crop, that is, the buds growing downwards producing licorice-roots, the suckers forming buds for future planting, width of bed permitting of cross rows of plants. The buds and suckers are left in the ground for three years and a half, no crop being obtained until the September following the fourth spring. The first manuring is sufficient, the plants being weeded as required during each summer. They do better in a hot, dry summer, after the first season, the last five or six wet years before that of 1884 not having proved good ones for the crop. Frost is said not to harm the plant, but the coldest season in Yorkshire seldom shows a fall to zero, though the ground is often frozen solid to some depth. The plant is reported very hardy, without worm or parasite, and little troublesome to the cultivator. Since the tops do not show any luxuriance of growth till the third year, the universal custom is to plant the trenches for the first year with "ash" potatoes, described as a potato with a very small top not likely to overshadow the staple. For the second year cabbages are grown between the beds; but for the third and following half-year the trenches must lie fallow, as the licorice is then luxuriant and presents in the summer months the appearance of a plantation of young ash trees, for instance. The grower plants a fresh crop in the spring of each year, and in the fall of the same year harvests the one of three years and a half growth. Beyond this, labor is only required to keep the beds free from weeds and to cut the plants down in November or December when the sap is out. In case of a severe winter, the tops may be protected by a light covering of earth. No irrigation is required, even in the driest summer. In gathering the root, the trench, not the bed, must be dug down to a great depth, thus exposing, without injuring, the roots, and the whole plant carefully taken out of the ground. The earth from the second trench is thrown into the first, and so on, to the other side of the field. The roots are placed in dry cellars, after removing the tops and suckers, which latter serve for the next spring's crop to produce "bud," that is, roots in their early stage for another year, sand being used to cover the roots. When dry, the roots form the ordinary yellow licorice for producing the juice of commerce, except a small portion of the top next the bud. This, called the "chumps," is not so valuable as the rest, and hence is separated and disposed of to be ground and sold to chemists who retail it for medicinal purposes and for mixing with stout and beer. A much finer powder is made from the finest root

(decorticated), and is used for medicinal purposes. The main part of the root is sold in sticks, of which a considerable quantity is consumed by children. That part of the plant above the ground seems to be of no value except for burning. The three and a half years' sucker which is gathered with the licorice plant has now produced "buds," which are reserved for planting in the following spring, and the new suckers also to be planted have been propagated from the old root, and cut off from it before storing it. To preserve these "buds" through the winter they are put either into a dry cellar, and, according to McKenzie, covered over with rotten dung, or, as in Pontefract, "pied," that is, made into a mound out of doors, and well covered over with earth or moist sand. They seem in this way successfully to endure the cold, wet winters of Yorkshire.

The approximate cost of an acre of licorice on new ground is about \$450, as follows:

Trenching and preparing land.	\$80
Forty thousand buds, at \$2.50.100	
Planting and manure...	85
Four years' rent and rates	
(taxes).....	125
	\$390
Four years' interest on above,	
say.....	75
Total.....	\$465
Average produce of one acre of	
licorice, 45 cwt., at \$14....	\$630

This calculation is on the assumption that this is the first crop of licorice, the cost of preparing the land afterward being about one-half.

The value of the buds will fully repay the cost of cleaning, taking up, etc.

The rent is calculated at \$30 per acre.

Some English growers think the plant might be made to do well in the United States. The difficulty anticipated would be to obtain buds in sufficient number to furnish seed. The average price of buds and runners is about \$3 per 1,000. The grower must wait until the crop is ready before the buds produced from the runners are available, being taken up with the crop. No one seemed to think there was any way of planting by seed alone—at least, from the cultivation of the plant in England. All the licorice grown in Pontefract is used, it is said, in Britain by chemists, etc., who find a ready market for the roots as they are. It has not lately paid to crush the comparatively small domestic roots, while the Spanish juice, now admitted free of duty, is so cheap. The manufacturers of the "Pontefract cakes," therefore, depend for their supplies on Spanish and Smyrna juice. This extract, inspissated from the plant either in its wild or cultivated state, comes to them in large packing-cases of 2 cwt. each, the cases securely dovetailed and lined with paper to avoid leakage in case of heat—the juice being really a solid plastic mass of a dark brown color, feeling like tar and inclined to run if subject to great summer heat. It may, indeed, be run into these cases. The preliminary mixing and boiling of the crude extract is a secret process. Visitors are, however, allowed to see it later in large masses, perhaps more properly called embryo Pontefract cakes, spread on heavy tables, and there rolled by women as dough is worked. This mass is then rolled out by a machine into thin sheets, laid on trays, and removed into a room at a temperature of about 100°, and there left until the following morning, when it is cut out, stamped by machinery into various forms, including the well-known "Pomfret cake," which holds

its own, with many other novelties of design, such as letters of the alphabet, fluted sticks, etc. The sweetmeat, as it has now become, is again subjected to a high temperature to "skin over," and is then packed in card-board boxes, which are placed in wooden cases and sent off to all parts of the British Isles and the colonies.—*Chemist and Druggist*.

Vanillin vs. Vanilla.

In 1876, the kilogramme of artificial vanillin was worth \$1,750. To-day it sells for about \$190. One kilogramme of the finest vanilla is worth, in the market, to-day about \$16 the kilogramme. Twenty grammes of vanillin are equivalent in flavoring power to 1 kilogramme of vanilla, and cost only about \$3.75. It is evident, therefore, that the cultivation of the natural vanilla will soon cease to be as profitable an undertaking as it used to be. It is not likely, however, that it ever will be given up entirely, for natural vanilla, after all, has certain advantages which will make it preferable for various purposes.

New Source of Citric Acid.

LARGE quantities of citric acid have been extracted from the fruit of the cranberry, which contains 1½ to 1¾ per cent of the pure acid, accompanied by ½ to ¾ per cent of malic acid; but the quantity of the latter is said to vary in different localities, and it diminishes as the fruit becomes completely ripe. A certain quantity of malic acid is, however, always present. It is not probable that the fruit of the cranberry, though extremely abundant in some localities, will be able to compete commercially with the lemon, any more than the tomato can,* which Silvestri showed to contain a large proportion of citric acid. The manner in which Groeger extracts this acid from the German cranberry is as follows: The fruit is ground in a mill, and pressed to obtain the juice; the residue is treated with water, and subjected to pressure three times more. The first operation yields 57 per cent of free acid. The liquids, being all united, are treated with a solution of gelatin, which precipitates all the tannin. The precipitate is very abundant, but is soon deposited. Having ascertained by a test made upon a small portion of the clear liquid how much carbonate of lime is required to saturate it, this quantity is added to the whole of the solution decanted (not filtered) from the precipitate of tannate of gelatin. When the entire liquid is perfectly saturated it is heated until it boils. The boiling causes citrate of lime as white as snow to be deposited, and this being collected and strained in the usual manner is decomposed by the action of sulphuric acid at 10 per cent. In carrying out the latter operation, it is also important to ascertain, by a previous test made upon a small quantity, the exact amount of diluted sulphuric acid requisite to effect the decomposition of the citrate of lime. From 1 to 1½ per cent of pure crystallized citric acid can thus be obtained from the fruit of the cranberry. The red coloring matter appears to be entirely got rid of with the tannin, as the citrate of lime precipitated by boiling is perfectly white. Carried out upon a large scale, it might prove advantageous to utilize the by-products, malate of lime and sugar; this is done by evaporating the residual juice (after separating the citrate of lime) to one-fourth of its volume; when the malate of lime is separated, the 20 per cent of sugar remaining is fermented, and the spirit collected by distillation.—*Mon. Mag. of Pharm., etc.*

* [This is the first statement we have noticed that a tomato can be a source from whence to obtain citric acid.—ED. AMER. DRUGGIST]

A SIMPLE WATER BLOWPIPE.

A SIMPLE apparatus, which may be easily put together in any laboratory, for producing a blast of air, has been designed by Alexander Kaleczinski, of Budapest.

The principal portion is an ordinary filter-pump arrangement made of glass, *A*, which in the illustration is shown to consist of one piece. It may be made of several pieces joined together (see Fig. 1), but it will be found preferable to use one made by the glass-blower, as in Fig. 2. The other portions of the apparatus are easily intelligible without description.

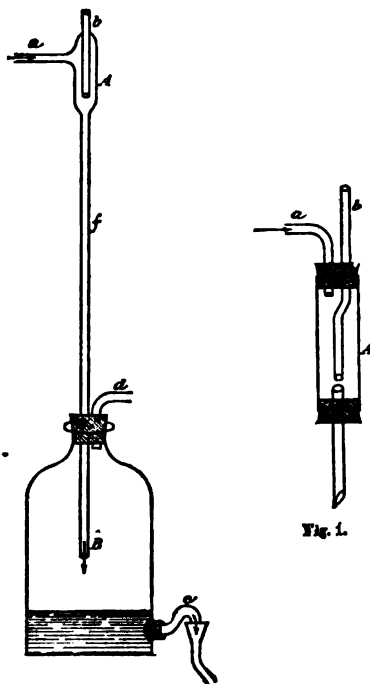


Fig. 2.

Kaleczinski's water blow-pipe.

When the filter-pump *A* is set in motion, the jet of water passing down the tube *f* aspirates some air through the tube *a*, which air mingles with the water and arrives in the reservoir *B*. At the same time the accumulating water drives the excess of air out through *d*, and the excess of water flows off at *c*. While the pump is at work, the air in the flask is always under pressure, and may be utilized for various purposes; for instance, for the glass-blower's lamp, for the blast-lamp in heating crucibles, etc.—*Rep. d. Anal. Chem.*, 1885, No. 22.

Apomorphia as an Anæsthetic.

BERGMEISTER and Ludwig have found that apomorphia has a local anæsthetic effect similar to cocaine. On man the repeated instillation of six to twelve drops of 1 to 2 per cent solution also produced local anæsthesia of the cornea and conjunctiva. The following observations were also made: 1. The instillation was somewhat painful and irritating. 2. A temporary dilatation of the pupils accompanied the beginning of the anæsthetic effect. 3. The conjunctiva, especially of the lower lid, suffered a diminution of secretion almost to total dryness. A slight nausea was also produced, but in one instance this was prevented by the addition of three drops of one-per-cent solution of atropia. The anæsthesia was, however, then not so complete.—*Cincin. Lancet and Clinic*.

Congo-Red as Reagent for Free Acid.—A new artificial coloring matter lately discovered by Martins, and known in commerce as Congo-Red—which has the property of dyeing cotton without mordants—has been found by W. Herzberg to be a service-

able reagent for free acids in presence of alum. [May probably be used in many other cases.]

As an example, the method of testing aluminized paper for free acid is thus given. Extract the cut paper with distilled water, and immerse in the latter a strip of pure filtering paper which has previously been saturated with a dilute aqueous solution of congo-red (a concentrated solution produces a brown precipitate with alum). The bright rose tint of the congo-red paper changes to sky blue if free acid is present.—*Mittheil. d. K. Techn. Versuchs Anst.*, 1885, 101.

Ammonio-Ferrous Sulphate as a Test for Nitric Acid.

ROSA recommends to use the green sulphate of iron and ammonium (protosulphate of iron and ammonium, ammonio-ferrous sulphate which is used by photographers as a developer), in place of the crystallized sulphate of iron as a test for nitric acid. It is more stable than the latter, either in substance or in solution. It is used in the same manner as ferrous sulphate. Equal volumes of the liquid to be tested for nitric acid, and of concentrated sulphuric acid are mixed, the mixture cooled, and then a layer of the solution of ammonio-ferrous sulphate poured cautiously on top. Even if only $\frac{1}{100}$ part of nitric acid was present, a brown zone will form at the line of contact of the two liquids.—*Gaz. chim. Ital. and Chem. Zeit.*

Estimation of Free Sulphuric Acid in Vinegar.

B. KOHNSTEIN suggests the following as a convenient and practical method for quantitatively determining the amount of free sulphuric acid in vinegar: 100 Cc. of vinegar are shaken up with freshly burnt pure magnesia in sufficient quantity to complete neutralization. The whole is then filtered; 25 to 30 Cc. of the clear filtrate are dried in a porcelain dish, and residue heated to redness. The magnesium acetate is thereby converted into carbonate, while any sulphate present remains intact. A too high temperature must be avoided in the incineration, so as to prevent any decomposition of sulphate. The incinerated residue is then mixed with water containing carbonic acid, and the whole evaporated down, digested with hot water, and filtered, whereby magnesium sulphate passes into the filtrate, and the carbonate remains on the filter. The filter is washed until a drop of the filtrate on testing ceases to give a reaction for sulphuric acid. The magnesia in the filtrate is then determined as pyrophosphate, any lime present having been previously precipitated.—*Rundschau (Leitmeritz) and Analyst*.

To Remove Old Paint.

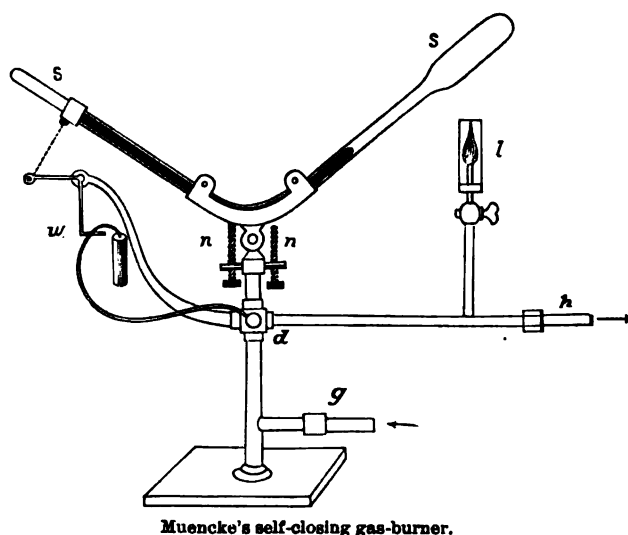
OLD paint and varnish may be removed from wood and iron by applying a mixture of one part of American pearlash to three parts of quick stone lime. Slake the lime with water and add the pearlash, making the mixture of the consistency of paint. With an old brush lay the mixture over the whole of the surface to be cleaned, and after fourteen or sixteen hours the paint can easily be scraped off.—*Sci. Amer.*

SELF-CLOSING GAS BURNER.

ON page 67 of our volume for 1884, we described a contrivance for automatically shutting off the supply of gas in case the flame (of a burner, gas stove, etc.) should at any time be momentarily extinguished by the failure of a supply of the gas. It will sometimes happen that the gas-meter is turned off by mistake or for certain purposes, without due notice being given to all persons using the gas. Some important operation may require the continued use of gas day and night, and, should the supply of gas be suddenly cut off, the burner would remain open, and allow the gas to escape so as to fill the room, when it is turned on again.

Dr. Robert Muencke has devised another arrangement for accomplishing the same purpose. A glass tube, bent at a slightly obtuse angle, and of the shape shown in the cut *s s*, is partly filled with mercury and hermetically sealed. It is fastened into a hinged socket which rests upon the ends of either one of the screws *n n*, sufficient play being allowed to permit the tube assuming the positions required, as will be explained directly. The gas enters by the tube *g*, passes through the joint *d* and along *h* to the regular burner or gas stove which is to be supplied with the gas. At *l*, a small flame is kept burning (supplied by the same stream) which heats the enlarged end of the glass-tube, causing the contained air to expand. This drives the mercury over into the other limb, which thereby becomes heavier and sinks so as to rest on the screw. When in this position, the handle of the stop-cock *d*, consisting of a stiff wire to which a weight is attached, is raised up, and the weight laid upon the projecting prong *w*, where it will remain as long as the glass-tube retains its present situation. In this position, the stop-cock *d* is open and allows the gas to pass.

Should the small flame *l* go out, the air in the glass-tube would cool off and



Muencke's self-closing gas-burner.

contract, the mercury would recede and cause the right-hand arm of the glass-tube to become heavier, when it would tip over so as to rest on the right-hand screw. This tipping over would cause the weight to fall, which would result in closing the stop-cock *d*.—*Zeitsch. Anal. Chem.*, 1885, 581.

Oxygenated Drinking-Water.—It is said that some easy method of procuring oxygen, invented by Messrs. Brin Brothers, of Paris, has enabled that firm to supply distilled water, charged with oxygen gas under pressure, as a drink similar to soda or seltzer water. It is supplied, like the latter, in siphons for table use.—*Monthly Mag. of Phar.*, etc.

Incompatibility of Chloral and Alcohol.

No preparation containing alcohol should be put in a prescription with chloral hydrate, and especially so when the bromide of potassium or of sodium also enters the prescription. If the solutions are at all concentrated, the chloral will separate as an alcoholate, float on the surface, and thus give rise to a great risk of administering an over-dose, unless the bottle is "well shaken before taken."—*Med. Age.*

On the Sulphovates.

SULPHOVINATE or sulphethylate of sodium and other bases have been considerably used some years ago, and are still in slight demand. Regarding their stability, the following note of Mr. T. L. Phipson in the *Chemical News* (November 13th) will be of interest:

"Some years ago, I published in the *Chemical News* a few observations on the preparation of sulphovates. It will be remembered by many of your readers that sulphovinate of sodium was recommended by Dr. Rabuteau and others as an elegant substitute for sulphate of sodium in pharmacy. It has since been discovered that these compounds are very unstable and quite unfit for medical use. The sulphovinate of sodium becomes transformed in time into bisulphate of sodium, which would act more or less as a poison with the doses in which the sulphovinate was prescribed, and some fine, transparent crystals of sulphovinate of barium prepared in my laboratory, three years ago, have become quite opaque and changed into sulphate of barium."

Improvement in the Adjustment of the Strength of Reagents used in Analysis.

In the preparation of reagents for use in analysis, it has been hitherto customary to follow a purely empirical system, inasmuch as most of the solutions are made in proportions which have not the least reference to their behavior towards others, but are chosen without any definite plan, being made in the proportion of 1, 2, 5, 10, 20, etc., parts to 100 parts of water.

Dr. R. Wollny proposes to do away with this unsettled arrangement, and to substitute therefor reagents that shall be commensurate with each other, that is, such solutions, in which equal volumes contain equivalent quantities of the reagent, just as in volumetric analysis. In some cases it may not be convenient to adjust the proportions so that equal volumes of the solutions are equivalent. In such exceptional cases, a simple (perhaps decimal) multiple or fraction of the normal strength may be selected.

The objects which Dr. Wollny had in view are almost self-evident, particularly to those who have had occasion to witness the slipshod, hap-hazard attempts of beginners in qualitative analysis. It requires a considerable time until the learner finds out what is meant by "exactly neutralizing," "slightly acidulated," "strongly acidulated," "faintly alkaline," or what may be considered as a "slight excess," or how much of a reagent is supposed to be added when a substance is to be dissolved in "an excess" of the reagent. Had the learner been accustomed, from the very beginning, to work with solutions representing molecular proportions, many of these doubts would never have occurred to him, much time would often have been saved, as it could have been known beforehand how much of a reagent would be necessary to produce a certain effect, and large quantities of reagents would have been saved, for it is a frequent occurrence that unskilled analysts or beginners are extremely

wasteful in reagents, expecting often to produce a certain result (solution or precipitation) by adding more and more of the reagent, which, if it could have taken place at all, should have occurred long before.

Dr. Wollny has been using "normal" reagents for some time and has found them so useful that he has caused 160 labels to be printed for sale.* As an example, we reproduce the following, translated into English:

BARIUM CHLORIDE.

BaCl₂ . 2H₂O + Aq.
Ba 56.20 Cl 29.05 H₂O 14.75
Mol. W. 244 . Spec. gr.† 1.0878
11.2 parts in 100 parts
122 Gm. in 1 Liter = 1 Equiv.

Supposing a beginner is to study the reaction of the barium compounds. He will then successively apply the following quantities of test-solutions to eight samples of the solution of barium chloride, of 1 C.c. each:

- $\frac{1}{10}$ C.c. or 2 drops of equivalent concentrated sol. of potassa (cont. 10 equiv.).
- 10 C.c. of diluted sol. of potassa (cont. $\frac{1}{10}$ equiv.).
- 1 C.c. of normal sol. of soda (cont. 1 equiv.).
- 2 C.c. of sol. oxalate ammonium (cont. $\frac{1}{2}$ equiv.).
- 0.2 C.c. of sol. chromate potassium (cont. 5 equiv.).
- 1 C.c. of normal sulphuric acid (cont. 1 equiv.).
- 0.2 C.c. of hydrofluosilicic acid (cont. 5 equiv.).

The advantage gained by following this system will not only be felt in the more rapid progress made by the learner in the ordinary qualitative analysis, but will also be seen in the readiness with which he will grasp the principles of volumetric analysis.—*After Zeitsch. d. Anal. Chem.*, 1885, 402.

Chemistry of Oil of Lemon.

G. BOUCHARDAT and J. LAFONT have carefully fractionated oil of lemon, and examined the products obtained by the action of dry hydrogen chloride on the different fractions. In most cases, distillation was conducted under reduced pressure. The results lead to the conclusion that oil of lemon is a highly complex substance, consisting mainly of hydrocarbons of the composition C₁₀H₁₆, and a little cymene. The most abundant of the C₁₀H₁₆ hydrocarbons is a citrene, which boils at about 178° C., has a rotatory power higher than +105°, and yields directly a solid, optically inactive dihydrochloride. The oil also contains quantities of several terebenthenes, which begin to boil below 162° C., and yield monohydrochlorides differing from one another in their rotatory powers.—*Compt. Rend. and J. Chem. Soc.*

Quantitative Relationship of Pepsin to Peptones.

E. SCHUETZ, in his experimental investigation of this question, employs a pepsin solution prepared from the stomach of a pig, which is caused to act, under carefully regulated conditions, on a one-per-cent solution of egg albumen, previously freed from globulin by treatment with hydrochloric acid. By the addition of a small quantity of thymol, 0.2 gramme, previously dissolved in 1 C.c. alcohol, to 1,000 C.c. of the albumen solution, it is kept from decomposition, and serves for a long

series of determinations. Experiments proved that the thymol was without influence on the digestion, so long as the quantity added was less than 0.1 per cent. The determinations of the resulting peptones were made by the optical method, the solution being previously freed from other albuminoids by precipitations with ferric chloride, in presence of sodium acetate. Three series of determinations, yielding concordant numbers, established a simple numerical relationship between the quantities of peptone and pepsin, the peptone being formed in the ratio of the square root of the quantity of pepsin taken.—*Zeitschr. f. phys. Chem.*, 9, 577, and *J. Chem. Soc.*

Oil of *Jatropha Curcas* as an Adulterant.

MR. HIEPE reports, in the *Repert. d. Anal. Chem.*, that olive-oil, which is largely exported from Portugal, is frequently adulterated there with a Brazilian oil, which is extracted from the seeds of *Jatropha Curcas* (belonging to *Euphorbiaceae*). A good test for it is to add some nitric acid and copper to the suspected oil, when its color, after some time, becomes an intense reddish-brown. No other oil acts in a similar way, and ten per cent of this adulterant in an oil can be easily detected by this test.—*The Analyst*.

Note.—We quote this to append the remark that we believe there is a mistake here somewhere. Oil of *Jatropha Curcas* is an active purgative, analogous to croton oil, and is not likely to be mixed, on purpose, with olive oil which, besides, is much cheaper.—*Ed. AM. DRUGG.*

Dry Distillation of Wood.

It appears from M. Senff's experiments that the yield of crude pyroigneous acid, tar, charcoal, and gas is almost the same with the most different woods. But the richness of the acid waters in acetic acid and consequently the yield of dehydrated acid vary greatly. In this respect the wood of coniferous trees is the least valuable. The wood of the trunk furnishes more acid than that of the branches. The wood yields more acid than the bark, and sound wood more than dead wood. Rapid calcination yields more gas at the expense of the condensed products and of the charcoal; it yields also the weakest acid waters, and the charcoal is more hygroscopic than that furnished by a gradual action.

Antipyrin.

ONE of our medical exchanges, whose editor we have always been accustomed to regard as well posted and especially sound in his opinions, published in a recent number the following, in response to a query respecting the nature of antipyrin.

"Antipyrin is a preparation made from coal-oil. Its use as a medicine is pronounced dangerous by those who have investigated its physiological properties."

We think our confrère would do well to read his exchanges a little more closely, if he can say no more than this, for a remedy which is used so extensively.

Non-Actinic Bottles for Substances Affected by Light.

ACCORDING to A. Gawalowski, solids or liquids which are easily affected by light, such as nitrate of silver, salts of molybdenum and others, are best preserved in bottles of amber glass, covered with a green, blue, or violet layer, which may be "flashed" on.

Jamin and Masson's investigations have shown that no single-tint glass (blue, amber, topas color, or black) can keep out every trace of actinic light.—*Zeitsch. f. anal. Chem.*, 1885, 409.

* They may be obtained through dealers in chemical apparatus. So far, they have only been printed with German titles, being published by Dr. R. Müncke, of Berlin, at 1 mark. They will probably soon be introduced here with English titles.

† Of the solution.

Resorcin in Erysipelas of the Face.

ACCORDING to the *Neue Zeitung für Therapie*, the application of a two or three per cent aqueous solution of resorcin to a face affected with erysipelas produces an astonishingly rapid effect. It should be brushed on every two or three hours. The inflammation is said to be at once arrested, and the redness and swelling subside promptly.

Cocaine in Burns.

If a solution of 1 part of cocaine in 40 parts of liquid paraffin be applied to burns, the pain ceases and the healing process generally progresses favorably. P. Vigier, who communicates this fact, recommends for this purpose the liquid vaseline which he calls petrobaseline.—*L'Orosi*.

Similar reports are presented by others, as for instance, by Prof. A. Bignon, of Lima, who reports that cocaine dissolved in vaseline, in the strength of 20 per cent, is often preferred by the surgeons of his acquaintance for such purposes as catheterization, dressing for burns, etc.

A Mustard Sponge.

Mix the mustard in a basin with water until the mass is smooth and of even consistency. Then take the soft mass all up with a clean sponge, lay the sponge in the centre of a white handkerchief, tie up the corners neatly, and apply the smooth, convex surface to the skin. This mustard sponge, warmed again by the fire and slightly moistened, can be employed three or four times, is good for several hours, and saves the trouble of making a new poultice during the weariness of night watching. The sponge afterward can easily be washed clean in warm water.—B. W. RICHARDSON.

Glauber's Salt for Asthma.

DR. CHENERY, of Boston, mentions a physician who, years ago, told him that after twenty years' use, for himself, of the hundred and one remedies recommended, he had not found anything so prompt and satisfactory as Glauber's salt. When the attack comes on (usually in the night), the lungs close, and he seems to be breathing, as it were, through dry metallic tubes. At these times he starts out of bed, seizes a handful of the salt (which he always keeps within reach), and puts it in a tumbler of water, stirs, and begins to sip it, and by the time he gets a fire kindled, moisture starts in the respiratory passages, and the spasm relaxes. Having sipped awhile longer, and become warm, he is able to return to bed. The next morning, a slight cathartic action follows, and he is about as well as before.—*Therapeutic Gazette*.

Therapeutics of Terpin.

THIS crystalline hydrate from oil of turpentine has been investigated by Lepine, some of whose later results appear in *Revue de Médecine*. He finds it similar in action to turpentine, but better borne by the stomach, and acting in smaller doses. It, furthermore, is peculiar in causing fluidity and ease of expectoration, and is therefore ranked as the "best expectorant in existence." Even in chronic cases it gave prompt relief in 3 to 30-grain doses. In the larger doses, however, its action is rather to suppress expectoration, and it is so recommended for bronchorrhœa. In bronchitis it is best given in a watery (and slightly alcoholic) solution, and can be associated with any convenient syrup. Its solubility in alcohol is as 1 to 7; in cold water, 1 to 200; in water that has been boiled and then cooled to a lukewarm state, it dissolves with greater ease.

Upon the nervous system it acts as does turpentine, but in one-third the dose. In neuralgia and hystero-epilepsy it was tried with good results. In such cases it needs an associated astringent to avoid diarrhœa. Lepine's early hopes of its service as a diuretic have been disappointed. While it seems to do no urinary mischief in healthy individuals, it is not to be thought of in Bright's disease, as it decreases the renal secretion, and even causes albuminuria and hæmaturia. The crystals of terpin hydrate have neither taste nor odor, and create, therefore, no repugnance on the part of the patient, as is so often the case with turpentine.—*Therapeutic Gazette*.

Cocaine in Nervous Cough.

DR. GRAEFFER writes to the *Allgem. Med. Centralzeitung*, June, 1885, that he has successfully used warm inhalations of cocaine hydrochlorate twice a day in nervous cough, whooping cough, and trigeminal neuralgia, according to the following formula:

R Cocainæ muriat. 0.06 (gr. i.)
Aque dest. 45.0 (3 iss.)
Pot. chlor.,
Aq. amygd. amar., 5â 0.5 (7½ grs.)
M. S. Externally.

In adults and older children Graeffer employed the steam-spray; in smaller and irritable children the ordinary spray-apparatus, warming the cocaine solution previously under water. It is an important point to have the tongue drawn well forward, so as to allow the vapors to enter as deeply and freely as possible.—*Therapeutic Gazette*.

Pilocarpine for Stramonium Poisoning.

To a girl of four years, comatose from eating ripe thorn-apple berries, a Hungarian physician gave in five hours six-sevenths of a grain of pilocarpine. The first dose of $\frac{1}{4}$ grain produced no effect. He increased the dose to $\frac{1}{2}$ and, observing improvement, repeated till the child was convalescent. Sweating and salivation occurred, but not till after the last dose had been given.—*Medical Times*.

Atropine Poisoning.

FEDDERSEN (Diss. Inaug., Berlin, 1885) says that there are one hundred and three cases of poisoning from atropine on record, twelve of which were followed by death. Undoubtedly many unrecorded cases have occurred. Of these one hundred and three cases (to which Feddersen adds one of his own, brought about by an atropine salve and followed by recovery), ninety-eight were from prescriptions ordered for internal use, fifty-three from collyria. In nine cases it was given to destroy life; in ten it was taken with suicidal intent; eighty-four were accidental. In the cases due to collyria the strength of the solution varied from .17 to 3 per cent.—*Centralbl. f. Augenheilk.*

[A writer in the *Medical Times* quotes Hirschberg's opinion that toxic symptoms are never caused by the usual collyria employed (gr. iv. in 3i.). He says: "I have never yet seen a case of atropine-poisoning from the use of collyria."]

Digitalis-Poisoning.—The *Concours Médical* details the effects upon a woman of three fluidounces of tincture of digitalis. Within a few minutes intense vomiting set in, and a large portion of the drug was rejected, this being aided by emetics administered at the Hôpital Saint-Louis, where the patient was at once carried. Subsequently two sets of symptoms appeared: those attributable to gastric irritation (vomiting, pain), and those manifested in the circulation (irregularity and slowness of the pulse, vio-

lent delirium, cutaneous hyperæsthesia, muscular hemiparesis, vertigo, amblyopia, and xanthopsia). The treatment was stimulating: hypodermic injections of ether, ammonium carbonate, strychnine, and, later, frictions, electricity, atropine, and a carefully regulated diet. Recovery was complete on the eighth day.—*Medical Times*.

How Nitroglycerin Poisons.

ACCORDING to M. Hay the poisonous action of this compound cannot be explained by the action of its constituents. The symptoms are similar to those produced by amyl and potassium nitrites. The author found that, of the three NO₂ groups present in nitro-glycerin, only one is removed by the action of alkalies as nitrate, the other two combining with the alkali as nitrite, whilst the oxygen set free oxidizes the regenerated glycerin. An alcoholic nitro-glycerin solution reacts rapidly in this sense with an alcoholic sodium hydrate solution with development of much heat. The formation of nitrite, however, occurs even on digesting at 40° an aqueous solution of nitro-glycerin (1 : 800) with a little sodium hydrate (0.2 per cent); the reaction being complete in about ten minutes. Blood at the temperature of the body acts similarly; the blood becomes chocolate-colored, as is the case when it is exposed to the action of amyl or potassium nitrite. Spectroscopic observation reveals the methæmoglobin band. Reducing agents reproduce the red color of hæmoglobin, as in the case of the nitrites above mentioned. Hence nitro-glycerin acts by its conversion into nitrite.—*Bost. M. and S. Journ.*

Nitrobenzol Poisoning.—DR. MEHRER, in *Progrès Médical*, reports a case of poisoning by nitrobenzol. The patient, the son of a soap factor, came across a bottle of the poison, which was used for perfuming soap, and concluding from its pleasant odor that it was some agreeable drink, swallowed a mouthful of it. Immediately a feeling of "nothingness" came over him, with nausea, vertigo, and a desire to lie down. He cried out as soon as possible to be given something, as he was being exhausted by the pains which were gnawing his entrails. As soon as the nature of the accident was understood a large quantity of milk was given him to drink, and he was advised to go to the hospital as his best chance for prompt relief. When he reached the hospital his agonies were extreme, his breath had a striking odor of bitter almonds; the pulse was accelerated, the eyes reacted well to the light. The stomach-pump was used and the stomach well emptied and washed out. The vomited liquid consisted of a grumous mixture of water and curdled milk, and had an extraordinarily penetrating odor of bitter almonds. The case, according to Dr. Mehrer, has two points of special interest. First, eight to ten drops of nitrobenzol is considered a fatal dose, and it is said to remain from one to two hours in the stomach without manifesting its presence. Under its influence will appear torpor, heaviness of head, nausea, and colics; it is only later that convulsions, tetanus, and cyanosis appear (*Royal Encyclopedia*). In this case, though the amount taken was not to be compared with the above dose, yet the symptoms were not alarming. On the part of the nervous system, no symptoms whatever were observed. The first thought suggested was that it was a case of poisoning by cyanide of potassium. But after the development of this case, confusion of poisoning with cyanide of potassium ought not to be possible except in post-mortem investigations.—*Louisv. Med. Jour.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,623.—**Ward's Iron Mixture** (Supplement to Query 1,587 in our last October number).

We have been favored with the following note, which evidently presents the correct answer to this query, and for which we express our thanks:

Editor American Druggist:

In the October number of your journal, I find an inquiry for a formula for "Ward's Iron Mixture." Such a preparation is occasionally prescribed in Philadelphia. The inclosed formula for the same is taken from the last edition of Parrish's Pharmacy (by Wiegand), page 981:

Ward's Iron Mixture.

("A Solution of Malate of Iron.")

Take of

Cranberry Juice.....fl. 3 12

Hydrated Sesquioxide Iron, 3 4

Mix and allow to stand 48 hours, then add Alcohol.....fl. 3 4 and filter. The dose is one to two teaspoonfuls.

GEORGE M. BERINGER.

PHILADELPHIA, NOV. 21st, 1885.

No. 1,624.—**Emulsifying Cod-Liver Oil** (J. C. M.).

So far as we are aware, the proprietary emulsion of cod-liver oil which you mention in your note is made by the intervention of Irish moss. Compare our December number, page 233.

No. 1,625.—**Antipyrine** (E. H. & Co.).

The only firm which makes this chemical is the large aniline and color works of Meister, Lucius und Brüning, of Höchst on the Rhine. It may be had through any of the wholesale houses whose advertisements are to be found in our pages.

No. 1,626.—**"Jamaica Ginger"** (A. A. G.).

There are several proprietary liquid preparations of ginger on the market, one of which our correspondent names, and the formula of which he asks us to give him. We are, however, unable to do so, as none of these have ever been published and they are a trade secret.

An article published in our last November number, page 216 (see also p. 117), contains the outline of various processes for making soluble essence of ginger.

No. 1,627.—**Hamburg Tea** (A. A. G.).

This is said to be a mixture of licorice, marshmallow root, red poppy flowers, mallow flowers (*Malva sylvestris*), marshmallow leaves, and the yellow flowers of a species of *Stellaria*.

Others give the composition thus:

Marshmallow Flowers, cut...8 oz.

Licorice Root, cut.....8 "

Orris Root, cut.....1 "

Coltsfoot, cut.....4 "

Mullein Flowers, cut.....2 "

Anise Seed.....2 "

Mix thoroughly.

No. 1,628.—**Covering Acid Spots on Dark Clothing** (A. O.).

When freshly made, and the acid has not been strong enough to destroy the coloring-matter or fibre of the material, acid spots (which are mostly red or brownish) may be removed by applying an alkali, such as ammonia or soda or potassa. If they are old, this method is generally unsuccessful. In such cases, black ink may often be used with

advantage. According to the *Neueste Erfind. und Erfahr.*, a dilute solution of nitrate of silver applied to the spots will cover them more effectively than anything else. All the more, we hold to black ink, as we have furnished up many acid spots with a most artistic and economical result.

No. 1,629.—**Baking Powder** (J. D. C.).

The brand of baking powder mentioned in your letter is reputed to be one of the best in the market.

A good baking powder may be made by mixing:

Cream of Tartar.....22 oz.

Bicarbonate of Sodium....10 "

Tartaric Acid.....150 grs.

Wheat Flour.....8 oz.

Rub the ingredients, which should be perfectly dry, together in a mortar and pass them through a sieve. Keep in well-closed bottles or tin-boxes.

No. 1,630.—**Use of Menthol for Piles** (J. W. B.).

Several writers have pointed out the benefit derived from menthol in hemorrhoids and similar distressing affections. In fact, the local anæsthetic effect of menthol is well-known in a general way, and special applications will no doubt suggest themselves to almost any one. The following was recommended some time ago by Dr. Salisbury:

Menthol.....1 drachm

Carbolic acid.....1 "

Oxide of zinc.....1 "

Oil of chaulmoogra.....4 drachms

Oil of almonds, expressed 4 "

Cerate.....2 ounces

The therapeutic effect of this compound, however, does not depend upon the menthol alone.

No. 1,631.—**Naphthol** (E. J. D.).—M. and "Ana".

The article on naphthol you are looking for will be found on page 91 of our volume (NEW REMEDIES) for 1883, where its chemistry is explained. The quality of naphthol (β -naphthol) which was on the market at that time was not what may be called chemically pure, but at present this may be obtained without difficulty. It has not been extensively used during the last two years; indeed, during part of this time it has almost fallen into disuse, caused probably by the reports of Kaposi and some other dermatologists that it sometimes produces symptoms of intoxication when applied to open wounds. It would seem, however, that recent experience has shown this to be but seldom the case, and probably be caused by some accompanying impurity. Nevertheless, until the doubt is perfectly cleared up, caution should be exercised when applying it in any considerable quantity or in strong solution.

No. 1,632.—**Cleaning Metals Preparatory to Plating** (E. S. W.).

This correspondent wants information on the best method of removing iron-rust, and especially grease, from knives, forks, and any other metallic ware, preparatory to plating.

If the metal is iron and is covered with rust spots, the latter must be removed by mechanical means, such as grinding, scouring with very fine sand and water. If the rust is only a very thin film, and of recent date, immersion in some dilute acid (dil. sulphuric acid) will generally remove it. Oxalic acid will also answer, particularly in the case of some other metals, such as brass, copper, etc. After the mechanical cleaning, the article should always be cleansed chemically, if it will stand it, namely, either by dipping it in a dilute acid (as before mentioned) or in hot alcohol or benzin. When they are thoroughly freed from grease by this

treatment, they may be at once immersed into the plating-bath. Should the latter not be ready to receive them, they should be kept in alcohol until the bath is ready.

No. 1,633.—**Filtering-Paper** (J. S.).

For analytical work, the best filtering paper was at one time reputed that made by Munktell (Sweden). This is still made, but it is exceeded in quality and purity by that made by Schleicher and Schüll, of Düren, Germany, according to the testimony of all chemists that have made use of it. We have used the filtering-paper of this firm, when there was no agency in this country, and we had to import it ourselves. It has now become so well known that there is hardly any chemist who does not use it. The above firm make different kinds of filtering-paper adapted for various purposes. The numbers 595, 597, and 598 represent those which are most generally serviceable, the first being thin, the second of medium thickness, and third very heavy. Number 597 is, in our judgment, the most serviceable for general use. These papers are white and filter very easily. Their price is but little more than that demanded for the ordinary French filtering-paper, while the time saved in filtering amply repays for this. These papers may be had either in sheets (by quire or ream) or in packages of one hundred cut filters, through the trade.

No. 1,634.—**Gallein as Indicator** ("Senior").

Gallein is a trade name for pyrogallol-phthalein, or the anhydride of pyrogallin-phthalic acid. It is prepared by heating 1 part of anhydrous phthalic acid and 2 parts of pyrogallol (pyrogallallic acid) for several hours at a temperature of 190-200° C., dissolving the fused mass in alcohol, precipitating the crude compound with water, then converting it into the acetyl compound by treating it with glacial acetic acid, recrystallizing several times, and decomposing it with caustic potassa. It forms a brownish-red powder, or small crystals of a green, metallic lustre. It is difficultly soluble in hot water, almost insoluble in ether, but easily soluble in alcohol.

Dechan recommended this substance, some time ago (*Pharm. Journ.*), as an indicator in alkalimetry. He stated that he obtained better results with it than with phenol-phthalein. To judge from the reported behavior of the substance with various alkaline substances (compare Beilstein, "Handbuch der organ. Chem.," II., 1,620), it would appear that this needs further confirmation. At all events, you will have to try it yourself, as we have had no experience with it.

No. 1,635.—**To keep Insects out of Rhubarb** ("Rheum").

As long as rhubarb is kept in bottles, drawers, or boxes which are not perfectly tight, there is always a chance of insects getting at it. This is of course the case with many other drugs. When insects have once made their appearance, the best remedy, in our opinion, is to transfer the affected drug to vessels which can be perfectly closed—tin canisters which can be soldered with fusible metal (see elsewhere in this number) are best—and to introduce, before closing the vessel, a sponge saturated with bisulphide of carbon. For a space of about one cubic foot, 2 fluidrachms of bisulphide of carbon is sufficient. The sponge should be so situated that it will not come in contact with the rhubarb. When the box or canister is opened again at any subsequent time, it is only necessary to expose the pieces of rhubarb in a warm place for a short time, when any adhering odor of the bisul-

phide will be dissipated. Chloroform may also be used, but is not quite as effective as the bisulphide. If bottles are used for storing the rhubarb, the stopper should be covered or secured with a melted mixture of gelatin 1 part and glycerin 2 parts. Or, stone jars may be taken, and similarly secured. There are, of course, other methods feasible, but the above has proved most effective in our hands, though we have had occasion to use it more on other drugs than on rhubarb.

No. 1,636.—Preventing the Darkening of Elixir of Iron, Quinine, and Strychnine (J. D. C.).

We are asked the following question: Will you please tell me how to keep elixir of the phosphates of iron, quinine, and strychnine from turning dark. I use this formula:

Quinine.....	64 grs.
Strychnine.....	2 "
Alcohol	2 fl. oz.
Syrup.....	3 "
Pyrophosphate Iron.....	128 grs.
Water.....	8 fl. oz.
Elixir of Orange.....	8 "

Dissolve the quinine and strychnine in the alcohol. Dissolve the iron salt in the water, add the syrup and elixir and mix.

It is a well-known fact that elixirs containing the phosphate or pyrophosphate of iron will gradually become darker in tint when exposed to light. We know of nothing that can prevent this, except the addition of certain strong acids, according to the nature of the iron salt. But these would be inadmissible, since they would render the preparation unpalatable. The only way that we know of to do away with the trouble is to use another iron salt altogether. Of course, the preparation then could not be called elixir of the phosphate of iron, etc., but might be called elixir of iron, etc. We would suggest that you try the tasteless tincture of iron in such quantity as may suit you best.

No. 1,637.—Oil of Orris (J. D. H.).

This correspondent asks: "How can I dissolve oil of orris in alcohol; it seems to me to be like a fixed oil, at least at ordinary temperatures."

Oil of orris is a trade name for the stearopten which is obtained from orris root by protracted distillation with water, and which is accompanied by a minute quantity of the true essential oil of orris. The stearopten or orris camphor was found by Flückiger to be myristic acid, and the volatile oil accompanying it was ascertained to be, not a constituent of the living orris root, but formed in the root during the drying.

Myristic acid—one of the fatty acids—is very little soluble in cold, but easily soluble in boiling alcohol, from which it crystallizes on cooling. If oil of orris is treated by hot alcohol, and the separated crystals be successively re-crystallized several times from alcohol, the myristic acid will gradually be found to have lost its aroma, while the mother liquids have become more and more aromatic.

The lesson taught by these facts is this, that oil of orris should be treated with alcohol at such a temperature that it can readily permeate the mass and abstract the real aromatic principle, the essential oil. Now, myristic acid melts at about 54° C. (129.2° F.). If alcohol at a somewhat higher temperature be shaken with it, in a well-stoppered bottle, it will dissolve the essential oil. A temperature of 150° F. will probably be found most suitable. Put the requisite quantity of alcohol into a flask, heat it to 150° F., then drop into it the oil of orris weighed on a piece of filter-paper and wrapped in it, and immediately close the flask with a good stopper. Agitate briskly to promote solution of the aromatic oil, and allow to cool.

No. 1,638.—Honey-Wine ("Inquirer").

According to Dzierzon, one of the most celebrated bee-experts, a most superior wine may be prepared from honey in the following manner:

25 lbs. of honey are mixed with 4½ gallons of water in a bright copper boiler, the mixture is gently boiled and constantly skimmed during half an hour. Three pounds of finely powdered chalk are then gradually added, under constant stirring. The tough scum which rises to the surface is skimmed off, and, when no more rises, the liquid is poured into a wooden vessel, where it is allowed to settle. The liquid is then carefully decanted into the cleaned kettle, mixed with 6 lbs. of finely powdered recently burnt charcoal, and raised to boiling. It is now once more poured into the wooden vessel, allowed to cool, and then filtered through felt or flannel. (The chalk is added to neutralize free acid, the charcoal removes the waxy taste).

The filtrate is transferred to the boiler, mixed with the white of 25 eggs and raised to boiling, when the coagulated albumen will have clarified the liquid. After having kept the liquid at a gentle boil for one hour longer, it is allowed to cool, filled into a cask, which must not be quite full, and the bung-hole covered with a piece of clean linen. In this condition it is allowed to remain until fermentation has been completed. When it is perfectly clear, the liquid is drawn off into bottles.

Dzierzon adds that this product, if properly prepared, resembles the best brands of Madeira and is a truly "royal" beverage. It keeps for any length of time, provided the bottles are stored in a cool cellar having a uniform temperature of about 40° F. They are preferably kept buried in damp sand, which may be from time to time moistened with salt-water.

No. 1,639.—Phewing Gum (Dallas, Tex.)

Until some years ago, spruce gum was exclusively used, either by itself or mixed with sugar and flavoring materials. Most of this is collected in the State of Maine, the total annual crop there being estimated at about twenty-five tons. Some of it is not sufficiently clean when gathered, and is purified in the following manner. Sieve-like boxes are covered with spruce boughs on which the gum is placed. Steam from a kettle of boiling water is then introduced underneath, whereby the gum is melted, strained by the boughs, and passes into the warm water where it is kept from hardening until the packer takes it out, draws it into sticks, and wraps it in tissue paper, when it is ready for the market.

At present, and for some years past, a soft kind of white, tasteless, and inodorous paraffin is partly or entirely substituted for it. Balsam of Tolu, deprived of its aromatic constituents, is likewise used (see New Rem., 1879, 81). Gum chicle, or balata, likewise serves as a constituent, and, from what we can learn, is used by the most prominent manufacturers in very large quantities. It has been used, in its crude state, for a long time by the Indians of Central and South America for chewing, but to fit it for use in this country, it needs purification. When pure, it is tasteless, and has the merit of lasting longer than other gums, as it is scarcely at all soluble. It is so ductile that a piece not larger than half an inch square, after being heated in the mouth, can be stretched into a thread one hundred feet long.

We have never seen a practical formula for the compound chewing gums published, but have no doubt that our correspondent will be able, by experimenting, to hit upon a suitable combination.

No. 1,640.—Selling Vaseline in other than Original Packages (N. B.).

This correspondent writes: "Would you kindly inform me through the AMERICAN DRUGGIST, if I have the right to bottle vaseline and affix the following label:

Petroleum Vaseline Jelly
A pure and highly concentrated essence of petroleum for medical purposes.

Put up by
N. B.,

(Address)

(City)

We are not competent to express an opinion founded upon law or judicial decision, but presume that a person who purchases any article like vaseline in large-sized packages, is perfectly justified in taking this from the large package, placing it in smaller containers, and selling it with a proper written label. If, however, a dealer has labels printed for the evident purpose of making a regular traffic in the article, which he purchases at reduced rates in large-sized packages, we think the proprietors of the article might have a right to stop him, on the ground that he deprives the public of the guaranty, which would be inherent in an original package issued from the factory of the owner, that the article sold by him is really what it professes to be.

On the other hand, it may be claimed that when an article such as vaseline has once been purchased and the seller has acquired all the royalty and benefit he can obtain by its sale, he ceases to have any further control of it.

We are inclined, however, to adhere to the opinion first given. It seems to us that any difficulty, if such there be, could be adjusted by a friendly conference with the owners of the article. We infer that our correspondent never intended to deceive the public, inasmuch as he uses the words "Put up by." He also uses the familiar title of the article given to it by its proprietors.

We should be glad to hear the opinions of some of our friends on this subject.

No. 1,641. Hand Grenades for Extinguishing Fires (B. S. J.).

Some time ago, we reported the results of our examination of the contents of one of the hand grenades of the market. The sealed bottle, on opening, was found to contain some free carbonic acid gas (under feeble pressure), a considerable sediment of carbonate or bicarbonate of sodium, and a liquid containing, in solution, chloride of sodium and chloride of ammonium, also some sulphate of ammonium and bicarbonate of sodium. We have been told that some of the manufacturers have simplified the composition of the contents.

A recent analysis by Dr. E. Geissler has yielded the following results:

1. *Hayward's Hand Grenade*.—Contents of the bottle examined weighed 760 Gm. A yellowish, slightly turbid aqueous liquid, containing in solution 15.7% of chloride of calcium and 5.6% chloride of magnesium with the usual impurities of the crude salt.

2. *Harden's Hand Grenade*.—Contents of bottle examined 555 Gm. Yellowish, somewhat turbid, aqueous liquid, containing in solution 19.46% of chloride of sodium, and 8.88% of Chloride of ammonium.

3. *Schoenberg's "Feuertod"* (German).—Contents, 440 Gm. A slightly turbid, almost colorless liquid, containing 1.66% of carbonate of sodium and 6.43% of chloride of sodium.

In connection with the above, we might quote two formulas from a collection at present being published in the *Pharmac. Centralhalle* by Eug. Dietrich. Both are intended to extinguish fire, one by consuming or withdrawing

oxygen, the other by coating the combustible objects with a protecting crust.

Dry Fire Extinguisher.

Nitrate Potassium, powd. 59 parts.
Sulphur, powd. 36 "
Charcoal, powd. 4 "
Colcothar 1 part.

Dry them thoroughly, then mix them, and fill into round pasteboard boxes holding five pounds. Through an orifice in the side a fuse or quick-match is introduced, which extends some four inches inwards and about six inches outwards. The latter end is fastened on the outside of the box, and a strip of red paper pasted upon it, bearing the inscription "Zündschnur" (quick-match).

These extinguishers are intended for use in closed rooms, and act automatically.

Mr. Dietrich states that he has himself had occasion to make use of these boxes with excellent effect.

Liquid Fire Extinguisher.

Chloride Calcium, crude. 20 parts.
Chloride Sodium 5 "
Water 75 "

The resulting solution is thrown into the fire by a hand-pump. The burning portions become incrustated and cease to be combustible.

Tanks containing the solution may be kept in suitable localities about the premises, together with hand-pumps for projecting it. See also the *U. S. Patent Office Gazette*.

No. 1,642.—Fusible Metal (Cleveland, O.).

It is well known that there are certain metallic alloys which have the remarkable property of fusing at temperatures far below that of any of their constituents. Such compounds are often exceedingly useful, as they are absolutely hard and rigid at the ordinary temperature, and, when they have assumed a liquid form, may be used as sources of constant heat in certain chemical operations. In the following you will find a list of alloys extending over a large range of temperature:

1. Melting points of the metals themselves:

Lead, 325° C. Tin, 228° C.
Cadmium, 315° C. Zinc, 420° C.
Bismuth, 267° C.

2. Alloys of two metals.

Lead, parts,	400	305	369	467
Tin, parts,	600	695	631	533

Melting Point in Centigr.	169°	187°	181°	197°
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Lead, parts,	637	778	840	875
Tin, parts,	363	222	160	125

Melting Point in Centigr.	235°	270°	283°	292°
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All of these alloys may be melted in a bath of some fatty oil, or of stearic acid.

3. Alloys of three metals.

Lead,	397	434
Cadmium,	71	67
Bismuth,	532	499

Melt. Point,	89.5°	95°
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Lead,	250	312	500	333
Bismuth,	500	500	300	333
Tin,	250	95	200	333

Melt. Point.	95°	95°	100°	123°
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Lead,	269
Zinc,	42
Tin,	689

Melt. Point,	163°
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Five of the above become liquid at or below the temperature of boiling water. The last-named alloy, melting at 168° C., is useful on account of its melting point being intermediate between the low-fusible and high-fusible alloys. Besides, it is inexpensive, as bismuth and cadmium are absent.

4. Alloys of four metals.

Lead,	249	251	260	243
Cadmium,	108	102	70	131
Bismuth,	501	504	522	488
Tin,	142	143	148	138

Melt. Point,	65.5°	67.5°	68.5°	68.5°
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Lead,	344	267	250
Cadmium,	62	100	125
Bismuth,	500	500	500
Tin,	94	133	125

Melt. Point,	76.5°	68°	68°
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All of these melt below the boiling point of water. When cold, they are hard and brittle.

In preparing such alloys, the proportions must be carefully observed. The metal with highest fusing point must be melted first, then the next one added, and the mixture cooled enough to just avoid solidifying it. Then the next metal is added, and so forth. By repeated melting and cooling the alloy, it becomes more homogeneous.

No. 1,643.—Sodio-Benzoate, Sodio-Cinnamate, and Sodio-Salicylate of Caffeine (M. J. et al.).

On page 195 of our last volume we gave formulas for the preparation of two of these compounds which we took from the *Pharmaceutische Zeitung*, and were communicated to this journal by Mr. C. Schwarz. They are as follows:

	Sodio-Cinnamate of Caffeine. Parts.	Sodio-Salicylate of Caffeine. Parts.
Caffeine.....	21.2	21.2
Cinnamic acid....	14.8	
Salicylic acid....		13.8
Cinnamate sodium..	17.0	
Salicylate sodium		33.8
Caffeine per cent in finished prepar. .	39.6	30.8

Since publishing the above formula, however, we have had occasion to prepare considerable quantities of the sodio-benzoate and sodio-salicylate of caffeine ourselves, and before undertaking the preparation, we found that the above-named percentage does not agree with that given by Merck in his original announcement (see *NEW REM.*, 1883, 168), according to which the three salts should contain the following percentages:

sodio-benzoate.	50.	} of caffeine.
sodio-cinnamate....	62.2	
sodio-salicylate	62.5	

It is evident, therefore, that the proportions given by Schwarz cannot be used if products of this percentage are required.

On experimenting, it will be found that it is not necessary to employ any of the ready-made sodium salts at all, or, if the ready-made salts are used, the compound may be prepared without adding fresh acid. When caffeine is mixed with an equivalent quantity of any of the above acids, and the mixture heated with water until it is dissolved, on cooling, some of the constituents will separate if the solution was concentrated. The latter will also be found to have a very acid reaction, because the caffeine is unable to saturate the acid in the presence of water. If now a little solution of caustic soda be added until the acid reaction of the solution is partly neutralized, it will be found that, on cooling, there is a diminished tendency of the constituents to crystallize out, in proportion as there is more soda added. In other words, the solubility of the resulting compound in water is the greater the more soda it contains. For this reason it is best to add a suf-

ficient amount of soda to just neutralize the acid, or at least to leave only a faint excess of acid.

Sodio-benzoate of sodium, therefore, may be prepared in the following manner:

Caffeine.....	21.2 parts.
Benzoic acid.....	12.3 "
Caustic soda.....	q. s.

(NaHO).

Water.....	200 "
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Add the caffeine and benzoic acid to the water and heat the mixture in a porcelain capsule until it is dissolved. Then remove a small measured portion of the liquid and keep it in reserve for use, in case the main portion should be inadvertently oversaturated with soda. Cautiously add to the main portion a solution of caustic soda, frequently stirring and testing it with litmus-paper or with phenol-phthalein paper, until it is neutral or only faintly supersaturated. Now add the reserved portion and afterwards, cautiously, enough soda-solution to render the liquid almost neutral. Finally, evaporate to dryness, stirring briskly toward the last, powder the residue and keep it in well-stopped bottles. The solution should be evaporated at once. If it is allowed to stand in a cold place, the caffeine will sometimes crystallize out.

If a measured portion of the liquid is reserved and the volume of soda-solution employed for the main portion has been noted, it is easy to calculate pretty close to the amount of soda-solution still needed. (This method of saturation may be employed with advantage in many other cases.) A very small amount of soda is required for the above purpose, one which does not stand in any clearly understood relation to the other constituents used. By actual trial, the above-named quantities of caffeine and benzoic acid required 1.475 parts of absolute sodium hydrate (NaHO).

The salt thus obtained contains between 60 and 61 per cent of caffeine, and, though it slightly differs in strength from that made by Merck, yet it may be unhesitatingly used in the same dose.

As it would be more convenient, however, to be able to remember a simple relationship, in figures, between these compound caffeine-salts and pure caffeine itself, it would, perhaps, be still better to adjust the final product so—in the case of the three salts mentioned in the beginning—that each shall contain exactly 50 per cent of caffeine.

In this case the formula for a 50% sodio-benzoate of caffeine would be as follows:

Caffeine.....	50.
Benzoic acid.....	28.8
Soda (calculated as NaHO)	
ab. 3.45 parts or.....	q. s.
Sodium benzoate (about 17.72 parts).....	q. s.

Prepare the salt, as above directed, from the first three ingredients, evaporate the final solution in a tared capsule to dryness, ascertain the weight of the residue, then add enough benzoate of sodium to bring the contents to 100 parts, re-dissolve in water, evaporate again, dry, and reduce the residue to powder.

The sodio-salicylate and sodio-cinnamate of caffeine may be prepared in the same manner. In these cases it will also be found advisable to adopt the strength of 50%.

We shall recur to the subject of the preparation of these salts at another time.

The Pharmacopœia Committee of the German Pharmaceutical Association, some time ago, proposed the following requirements of purity for two of these salts:

Sodio-Benzoate of Caffeine.

White granules, consisting of an amorphous powder, having a faint

odor of benzoin, and an aromatic, bitter, and benzoin-like taste. When the compound is cautiously heated between two watch-glasses, crystals of caffeine sublime. It is soluble, with a very gentle heat, in 2 parts of water, requires not less than 40 parts of alcohol for solution, and yields its caffeine to chloroform. On evaporating the chloroformic solution, the residue, when mixed with chlorine water and dried on the water-bath, yields a yellowish-red mass, which acquires a fine purple color upon the addition of ammonia [characteristics of caffeine]. The addition of hydrochloric acid to the aqueous solution of the compound produces a white crystalline precipitate [benzoic acid], which is re-dissolved either by heating or by the addition of alcohol. With ferric chloride it [the aqueous solution] yields a light-brown precipitate, which disappears on the simultaneous addition of hydrochloric acid and alcohol.

On warming 0.5 Gm. of the compound with 5 Cc. of chloroform, repeating this several times with fresh portions of the solvent, and evaporating the latter, not less than 0.2 Gm. of caffeine should be left behind.

Maximum single dose : 0.5 Gm. (8 grains).
Maximum daily dose : 1.5 Gm. (24 grains).

Sodio-Salicylate of Caffeine.

A white amorphous powder, odorless, of a peculiar bitterish-sweet taste, evolving vapors of caffeine when heated to about 180° C. [356° F.], which congeal to microscopic crystalline needles when coming in contact with a cold piece of glass. It is soluble in 2 parts of water and in 20 parts of alcohol, and it yields its caffeine to chloroform, particularly on warming. On evaporating the chloroformic solution, the residue, when mixed with chlorine water and dried on the water-bath, yields a yellowish-red mass, which acquires a fine purple color upon the addition of ammonia [char. of caffeine]. The aqueous solution of the salt strikes a deep violet color with ferric chloride, and with hydrochloric acid it yields a white, crystalline precipitate, disappearing either on heating or upon the addition of alcohol [char. of salicylic acid].

On warming 0.4 Gm. of the compound with 4 C.c. of chloroform, repeating this several times with fresh portions of the solvent, and evaporating the latter, not less than 0.2 Gm. of caffeine should be left behind.

Maximum single dose : 0.4 Gm. (6 grains).
Maximum daily dose : 1.2 Gm. (18 grains).

As will be seen, the compounds described by the Pharm. Committee are apparently of a different strength from that originally indicated by Merck. In fact they are not true salts, and may be made to vary in their composition by varying the proportions of the ingredients within considerable limits.

No. 1,644.—Clemens' Solution of Bromide of Arsenic.

We have again had several inquiries directed to us regarding the above preparation. A short time ago, we looked up the original papers of Dr. Clemens for the use of a friend, and from this we will abstract here the more important points, particularly as it appears that the remedy is being more frequently used than formerly.

Dr. Theodor C. Clemens, of Frankfurt on the Main (born there on July 1st, 1824, and still in practice), published his first paper on Bromide of Arsenic Solution in the *Deutsche Klinik* of 1859 (pp. 95, 106, 117) under the title "Das arsenigsaure Bromkali" (= "arsenite of bromide of potassium"). At that time he advocated the remedy chiefly in certain obstinate skin-diseases, intermittent fever, and some other disorders requiring powerful

alteratives. Subsequently the author had occasion to study its effects in diabetes, but did not publish his results until the year 1882, after having had an experience of twenty years with this disease. According to him, the remedy is one of the most trustworthy and effective in diabetes (mellitus and insipidus). His own formula for preparing the solution, given in the *Deutsche Klinik* (l. c.), is as follows, translated into English:

Arsenious Acid, powd.,
Carbonate of Potassium. 55 gr. 57½
Boil with:
Distilled Water lb. ½
until all is dissolved; cool, and add:
Distilled Water to make. troy ¾ 11½
Then add:
Pure Bromine gr. 115

He directs this solution to be agitated several times daily during the first week. During the fourth week it will become colorless, and is then ready for use. It should be kept in a cool and dark place.

In the *Allgem. Med. Central. Zeit.* of 1882 (p. 41, note), he says that the solution improves by age, and that it should be perfectly limpid, colorless, and tasteless.

His mode of using it in diabetes is as follows: The patient being put on a nourishing meat diet, the above solution is administered at first in single-drop doses diluted with much water, say, one drop of the solution three times a day in a tumbler of water. After this has been kept up for about eight days, the harrowing and annoying thirst of the patient will generally be greatly relieved. The urine should be carefully examined, and the quantity of sugar determined (most readily by the polariscope). The dose of the solution is then gradually to be increased to three drops, thrice daily, each dose being administered in a tumblerful of water. After about fourteen days, the amount of sugar in the urine will become less. When this point is reached, the dose is again gradually diminished until the single-drop doses are reached again, at which rate it may be continued for years without injurious effects. It is only necessary, besides, to observe the usual rules of diet suitable for diabetic patients, with the additional precaution that neither sour food nor raw fruits be eaten about the time when the medicine is to be taken. A very great additional help in the treatment of diabetes is "deep, often-repeated inspiration of fresh air, the confined atmosphere of dwellings and rooms being the worst enemy of such patients."

Concerning the chemical reaction which takes place in making the solution, we can only advance a theoretical opinion, based on general chemical principles: 57.5 grains of arsenious acid (As₂O₃) require for conversion into arsenite of potassium (KH₂AsO₃) about 40.1 grains of pure carbonate of potassium, or about 49.6 grains of the ord-salt. Hence, only a portion of the carbonate of potassium is thus consumed, and the liquid must have an alkaline reaction. When the bromine is added, the latter is gradually converted into hydrobromic acid, oxygen being slowly eliminated. 115 grains of bromine converted into hydrobromic acid require a little over 98 grains of pure carbonate of potassium for neutralization. As there is only about 8 grains, it is evident that the whole of the hydrobromic acid cannot be saturated, but only a quantity corresponding to about 9.4 grains of bromine. The remainder must be present as free acid. Just at this moment, we have no specimen of the genuine solution on hand to verify our speculation, but we shall shortly have occasion to test it. In our last May number (p. 99) we quoted a modified formula at present under trial.

QUERIES FROM EXCHANGES.

Blodgett.—A Texas correspondent gives the following as a "correct translation" of Rev. Mr. Wilson's formula for consumption cure:

Blodgett.

℞ Powd. ext. logwood ¼ oz.
" gum arabic 1 oz.
" sugar 1½ oz.
" tragacanth 1 drachm.
Mix together.

For *maconin*, 3ss., he uses the following: Morphine sulph., grains x.; powdered sugar, grains x. Mix.

Hypophos. of lime ½ oz.

Ext. cinchona, 3 ij.; for this he uses chinoidine, 2 drachms.

Alantine, 3 i.; for this he uses powd. castile soap, 1 drachm.

Sugar 1 pound.
Port wine, whiskey, or rum 1 pint.
Water 2 pints.

Mix the whole, shake well for a few days, when it will be ready for use. Dose, tablespoonful.*

Bromidia.—The following formulæ are said to respectively lead to permanently clear mixtures:

Pot. Brom.,
Chloral Hydrat. 55 3 iv.
Sol. Ext. Cannabis Ind.,
Sol. Ext. Hyoscyam. 55 gr. xvi.
Alcohol 3 ij.
Soft Water q. s. ad O. i.

M.

Rub extracts in glass mortar with alcohol until dissolved; rub salts to a powder, and mix. Then add hot water, triturate until dissolved, then filter.

Pot. Brom.,
Chloral Hydrat. 55 3 ij.
Ext. Cannabis Ind.,
Ext. Hyoscyam 55 gr. i.
Alcohol 3 i.
Water, q. s., ft. 3 i.
M. et filt.*

Thompson's Eye-Water is reported to contain:

Sulphate of Zinc 20 grains.
Sulphate of Copper ... 5 "
Tinct. Saffron 2 drachms.
Tinct. Camphor 1 drachm.
Rose Water 8 ounces.
Dist. Water 8 "
Mix and filter.*

Perry Davis' Pain Killer is said to be prepared as follows:

Take of
Powdered Guaiac 20 lbs.
Camphor 2 "
Powdered Cayenne Pepper 6 "
Caustic Liquor of Ammonia 1 lb.
Powdered Opium ½ "

Digest in 32 gallons of alcohol for two weeks, and filter.*

Florida Water.

Oil of Lavender 4 fl. oz.
Oil of Bergamot ... 4 "
Oil of Neroli 3 " drachms.
Oil of Orange 4 "
Oil of Clove 1 " drachm.
Pure Musk 4 grains.
Cologne Spirit, 96°, 1 gallon.
Tincture of Tonka, sufficient to color.

Macerate 15 days, and filter through paper.*

Extract of Lilac.—Piesse's "Perfumery and Kindred Arts" gives this:

Extract of Tuberose 1 pint.
Extract of Cassie ½ "
Extract of Orange Flower. 1 "
Tincture of Orris ½ "
Tincture of Civet ½ "
Rose Water, Triple ½ "

BIBLIOGRAPHY.

THE PRACTICE ON PHARMACY: A Treatise on the Modes of Making and Dispensing Official, Unofficial, and Extemporaneous Preparations, with Descriptions of their Properties, Uses, and Doses. Intended as a Hand-Book for Pharmacists and Physicians, and as a Text-Book for Students. By JOSEPH B. REMINGTON, Ph.G., Professor of the Theory and Practice of Pharmacy, and Director of the Pharmaceutical Laboratory of the Philadelphia College of Pharmacy, etc., etc. With nearly 500 Illustrations. 8vo. Philadelphia (J. B. Lippincott Company), 1885; pp. 1,080.

THE work begins with an introduction explaining the nature or objects of pharmacopœias and dispensatories, and the general rules and principles by which the arrangement of the subject matter and the nomenclature of the U. S. Pharmacopœia is governed. Next follows Part I., treating of the operations and manipulations occurring in pharmacy, together with the descriptions and illustrations of various forms of apparatus. A great deal of labor has evidently been bestowed upon this section. Since the time of "Mohr-Redwood-Procter," we have had no comprehensive work of reference on this important subject. Most of the new improvements or new appliances that were devised in subsequent years required to be searched for, with considerable loss of time, in the various pharmaceutical journals, the illustrated price-lists of dealers in apparatus, glass-ware, etc., and in various other works. Prof. Remington has collected together whatever appeared to him to be of sufficient importance and usefulness, and has presented it in an acceptable manner. It gives us pleasure to observe that in the preparation of the matter in this section the author has availed himself largely of the pages of **NEW REMEDIES** and **THE AMERICAN DRUGGIST**.

Part II. treats of the official preparations made by solution, maceration, percolation, and mixing. In this portion of the work we would like to see, in a subsequent edition, a more complete account of foreign pharmaceutical preparations, such as "alcoolat," "alcoolature," "alcoolé," "tisane," "potio," etc., which need not be enumerated in detail, and might be given in smaller type. But if such terms as "saccharure," "elæosaccharum," etc., are explained, it might be well to include them all. Indeed, it would be very desirable to give such an account of foreign pharmacy and foreign pharmacopœias, that the reader would be enabled to make comparisons with our own, and to recognize the distinctive peculiarities or differences inherent to the foreign preparations. The work would thereby become still more useful to the practical pharmacist.

Part III. treats of chemicals, and here we encounter a very useful feature in a series of diagrammatic tables presenting the definition, description, and tests of the several substances in a very practical and lucid method.

Organic and animal substances are treated of in Part IV. Great care and much work has evidently been bestowed upon this part, in which a large number of unofficial drugs and principles, or other vegetable or animal derivatives have been included.

Curiously enough, the last chapter

(LXII.) of Part IV. treats of pharmaceutical testing. This seems to us to be out of place here. It should either be placed somewhere under Part III., or perhaps as last chapter under Part I. Probably its insertion was determined on at the last moment only. In a second edition of the work, we would suggest that a more detailed explanation of the methods of volumetric analysis and its application to special cases be given.

Part V. treats of extemporaneous pharmacy. Here the experience of the author has enabled him to cover the ground very fully. Every pharmacist should carefully peruse this portion, as it contains many important hints, insuring accuracy, safety, and dispatch in dispensing, which, though generally known as beneficial, yet are frequently disregarded. The fact of their being presented in a connected manner makes their importance more prominent.

The concluding part (VI.) contains a formulary of unofficial preparations.

Having thus briefly outlined the contents, and basing our judgment mainly upon the more important portions of the work which we have read and examined with care, we have no

among them are some which were hitherto unnoticed by European writers. The author has adopted the nomenclature followed in Hooker's Flora of India.

In the preface he gives a brief account of one of the chief sources of information already made use of for the first edition, viz., a copious treatise on materia medica, entitled *Makhzan-el-Adwiya*, compiled by Mir Muhammad Husain, a native of Khorasan and pupil of Mir Muhammad Ali-el-Husaini; he resided first in Khorasan, then in Shiraz, and afterwards in India, principally at Murshidabad in Bengal. He tells us in his preface that in A. H. 1185 (A.D. 1771) he was persuaded to undertake the compilation of a Persian pharmacopœia, and that, when this was completed, he commenced writing the *Makhzan-el-Adwiya*, or "Treasury of Medicines," a work compiled from the most important of the Arabic, Persian, and Indian works on materia medica, supplemented by his own experience. There is ample evidence that he did not accept without inquiry the statements of older writers, as in many cases, after quoting their opinion, he proves it from personal observation to be incorrect.

An index of Marâthi names of useful plants is to be added as a supplement.



STUTTERING CUSTOMER in search of hippurate of sodium.—"Hip, hip." DRUG-CLERK, who is a member of a boat-club, and thinks his interlocutor is trying to raise a cheer—"Hurrah!"—*Fliegende Blätter*.

hesitation in saying that there is no treatise on pharmacy in the English language which could approach it in completeness or usefulness. Though primarily intended for the student, it will be found a valuable aid and work of reference for all who have to do with drugs, either as manufacturers, or dispensers, or prescribers.

Typographically considered, the book is one of the handsomest we have seen for a long time.

THE VEGETABLE MATERIA MEDICA OF WESTERN INDIA. By W. DYMCK, Surgeon-Major, Bombay Army. Principal medical storekeeper to Government; late Professor of Materia Medica, Grant College, Bombay; etc. Second edition, revised and enlarged. Parts I., II. 8vo. Bombay, 1885.

THE great value of Prof. Dymock's work has been amply testified to by the rapid exhaustion of the first edition. In this present one, the additions and improvements are quite numerous, equal care and attention having been bestowed upon every department of the subject. The history of each drug has been given more in detail, in consequence of a more thorough study of oriental sources of information, as we readily can recognize. The description, chemistry, uses, and commercial features have likewise been revised where necessary. Several drugs omitted in the first edition have been added,

Fluid Tolu for Syrup.—This title, as well as "Soluble Tincture of Tolu," is applied, of late, to certain preparations claiming to yield, by mere mixture with simple syrup, an elegant full strength *syrupus Tolutanus*. The following formula, recommended by N. Rosenwasser, is based upon the idea that the principles dissolved and held by the syrup are the acids of the balsam and some volatile oil:

B Balsam of Tolu	3
Alcohol	6
Glycerin	12
Carbonate of Magnesium gr. 120	
Water	q. s.

Dissolve the balsam in the mixed alcohol and glycerin with heat; add 12 ounces of water; let stand till cool. Pour the milky (cinnamic acid) liquid off from the balsamic resinous precipitate; then rub it with the magnesia, and filter, making up to 2 pints with a mixture of alcohol, 1 part, and water, 2 parts, poured through the filter. Of this, use 1 ounce to 15 ounces of syrup simplex to make the 1870 syrup. To make the 1880 syrup, the magnesia must be omitted, and the liquid strained and made up to the measures stated. 2 ounces of this, added to 14 ounces of syrup simplex, will fully equal, in resulting strength, the 1880 formula.*

Green Cerate is suggested as the possible want of a physician who ordered "green salve":

Yellow Wax	10 parts.
Burgundy Pitch	5 "
Turpentine	8 "
Pulverized Verdigris	1 part.

Add the verdigris to a cerate formed of the first three ingredients. May be formed into thin cakes by running it into paper moulds.*

[It seems to us more probable that the prescriber intended the so-called *Unguentum viridatum*, or *Adeps viridis*, prepared by digesting lard with fresh dandelion and elder leaves (or any other non-medicinal leaves), whereby the lard takes up chlorophyll and acquires a green color. It is sometimes used as a basis for eye-salves, or even by itself alone.—Ed. A.M. Dr.]

* *National Druggist*.

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NOTES ON PRACTICAL PHARMACY.*

[Continued from p. 9.]

TROCHES—PASTILLES.

TROCHES or **PASTILLES**, *Trochisci*, *Pastilli*, are small round cakes, weighing from 0.5-1.0-5.0 Gm. (8, 16 to 80 grains). As a rule, the weight of 1.0 gramme (16 grains) is that most commonly used, and it is also sanctioned by the *Pharmacopœa Germanica*.† When a physician prescribes Troches, they are dispensed when only partially dried, while, when they are intended to be kept in stock for a long time, they should be perfectly dried. The process of drying is carried on in a moderately warm place. The time required for the production of from ten to thirty troches, including drying, is about two hours.

The preparation of the mass for troches or pastilles, according to the prescription of a physician, was formerly accomplished, and would today be accomplished if the necessary apparatus were not at hand, as follows: The mass from which the troches are to be made is given the consistence of bolus (see page 8).

Every 250 parts of the powdered mixture, if it does not contain any viscous matters, must receive an addition of not more than 1 part of finely powdered tragacanth, or 5 parts of marsh-mallow root. Should more be used, the troches would be too hard when dried. The division of the mass is effected by means of the pill-machine, being rubbed into what is termed a pill-string, which is cut off between the grooved halves of the pill-machine under pressure, the pieces thus cut off are then trimmed with a knife, formed into pills, consperged, and pressed tolerably flat with a cork which has been notched on its smooth surface into a lattice-work or star-shaped device. A troche-stamp of metal, with a wooden handle, shaped like an ordinary letter-sealing tool, engraved with a star-shaped device, is also used. The rim of the troche is rounded, but

the larger ones, especially when the mass was not of sufficient plasticity, are apt to be more or less notched or cracked which, of course, is to be avoided as far as possible.

Troches have recently been designated as pastilles, and those in which sugar or chocolate form the chief constituents and corrigents of taste are known by this name exclusively. The *Pharmacopœa Germanica*, ed. I., translates *trochisci* into *PASTILLES*, and this designation, on account of its easier pronunciation, has become the one most generally employed.*

There are two kinds of pastilles, distinguished by their preparation and composition. In one kind sugar is the constituent, and in the other chocolate (*Semina Cacao preparata*).

PASTILLES with **SUGAR**. The mass for these is prepared by thoroughly triturating and mixing the drug em-

able, since the mass is thereby rendered more conveniently plastic. In this case, each 0.1 gramme of tragacanth will require 0.5 gramme more of glycerinated water. Although it is true that glycerin is a hygroscopic substance, yet, in this case, experience shows that it does not impede the drying of the pastille mass; the pastilles having been dried for several hours in air at the ordinary temperature, and then in a heat of about 25° C., will keep without undergoing any alteration.

The *Pharmacop. Germanica*, ed. I., directs that the powdered sugar should be moistened with diluted alcohol, and the pastilles made under pressure. For a pastille-mass made in this way, 100.0 parts of powdered sugar and 10.0-11.0 parts of dilute alcohol are required, but the mass has not sufficient coherence and plasticity, and too easily adheres to whatever it may rest upon.

By the addition of glycerinated water and some tragacanth, a mass is obtained which neither adheres to the tool with which it is pressed, nor clings to the apparatus with which it comes into contact. The appearance of the pastilles is always improved when no addition of conspergent powder (starch or lycopodium) is made in their manufacture. *Aqua Glycerinata*, or glycerinated water, consists of equal parts, glycerin and water.

In preparing a pill-mass in which sugar is the constituent, about $\frac{1}{4}$ of the quantity of sugar is taken and the necessary amount of water added. Then by diligent kneading with the pestle, it is made into a mass from which pastilles can be shaped, and the rest of the sugar is added with continued kneading. At first the mass is crumbly, but as the kneading proceeds it will, partly in consequence of deliquescence of part of the sugar, become soft, often too soft, so that it will be necessary to add more powdered sugar to obtain the proper consistence for a pastille-mass. Thus the labor may be reduced by employing the greater part of the sugar in making the mixture into a soft pastille-mass, and then adding the rest of the sugar. Since the pastille-mass containing sugar crumbles after lying for five or ten minutes, and has to be made plastic again by further kneading, it is recommended that the quantities that are to be made into pastilles be carefully weighed and divided by weight (and not by being divided by the pill-machine). The manner of making sugar pastilles varies considerably according as a larger or smaller number is desired.

If but few (from 10-50 pastilles) are to be made, or if the drug employed is

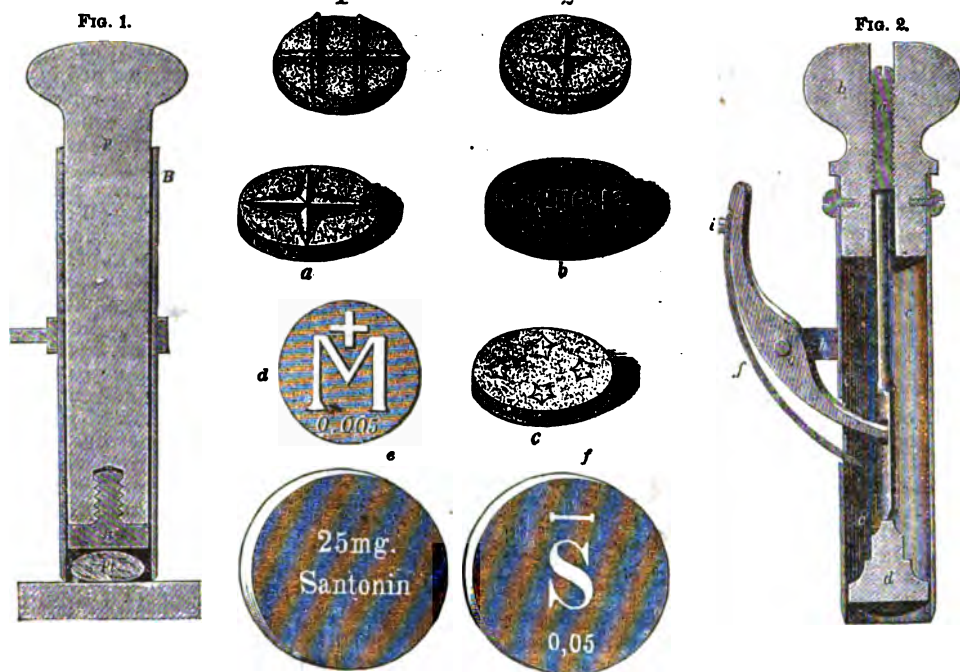


FIG. 1.—Vertical section of pastille-maker; a, cylinder with handle; p, pestle; st, stamp; pt, pastille-mass. 1. Troche stamped with a cork notched in lattice work. 2. Troche stamped with a troche stamp. Pastilles punched by the pastille-maker; a and c are pastilles made of sugar, b is a pastille of chocolate. d, Mark for Pastilles of Morphine. e, f, Pastilles of Santonin. FIG. 2.—Pastille-maker with spring and adjustable screw.

ployed with a portion of the sugar, and also with the powder that serves as the constituent, and after the whole powdered mass has been thoroughly mixed, adding cold water gradually, with continuous kneading, until a plastic mass is obtained. Tragacanth is generally used as the constituent, and gum-arabic, marshmallow, and white of egg are also frequently employed. The addition of a mixture of 1 part tragacanth and 2 parts gum-arabic will render the pastilles attractive in appearance. A further condition to be observed is that very finely-powdered sugar should be used. It is necessary to be cautious in adding the tragacanth, since it has a tendency to make the outside of the pastilles too hard when employed in excess. The pastilles, when dried, should be only so hard as to be easily crushed between the teeth.

Although a perfectly satisfactory pastille mass which dries easily and is also sufficiently hard, can be made from 100.0 grammes of powdered sugar (see below), and 8.0 grammes glycerinated water, still a trifling addition of powdered tragacanth (say 0.1-0.2 to 100.0 of powdered sugar) is recommend-

* Pastilles are also called *tablettes* in French. The application of the terms spirals or cones to pastilles is entirely inadmissible.

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

† An absolute confusion prevails in medical and pharmaceutical works, among the various designations *Trochisci*, *Pastilli*, *Tabulae*, *Rotulae*, *Tablettes*, *Cones* or *Spirals*, so that it is scarcely possible to obtain an intelligent view of these forms of administration of medicines. The designations observed in this work conform to the most prevalent custom in pharmaceutical practice. *Pastillus* is said to be the diminutive of *panis*.

a very active one, so that the dose must be accurately determined, the following procedure is adopted: the pastille-mass rendered perfectly plastic by having been kneaded with the pestle, as described in the making of troches, is made into portions with a pastille-divider, or, if this is not at hand, with a pill-machine, and each portion from which a pastille is to be made, is shaped into a pill and thrown into the cylinder of the pastille-maker, which is made of white-metal, brass, or German silver (c), open at the top and bottom, and then flattened by means of the wooden pestle (p), either by sufficient pressure or by moderate blows. A piece of stout paraffin paper forms a suitable foundation for the pastille to rest on.

Conspergents are used only when the mass is sticky or adhesive. Then the bottom of the cylinder must also be dipped into the powder before the making of each pastille. If, despite this precaution, some of the mass should adhere, it must be at once removed by wiping with a cloth. The pestle (p), which may be made of any hard wood, must not fit so closely into the cylinder as to prevent the escape of the air upwards, when it is forced down. Furthermore, as it is customary to impress a device or the name of the maker on the pastille, the lower end of the pestle is furnished with a female screw-thread, in which the stamp (st) (made of boxwood or metal) may be inserted.

The pastille-divider is made from hard wood of the form and size of the cutter or divider of the pill-machine, except that its ridges are one centimeter apart.

In the preparation of a large quantity of pastille-mass, a rolling apparatus is used, consisting of a rolling-board and rolling-pin (see the following cut).

The ROLLING-BOARD (b) is about 20 Cm. (8 inch.) broad, 30 Cm. (14 inch.) long, and 3 Cm. (1½ inch.) thick, made of hard wood, and perfectly even and smooth. Along both the long sides two ledges are fastened, which reach beyond the surface of the board about 2.75 Mm. (ab. ¼ inch) above the upper and 3.5 Mm. (ab. ⅙ inch) above the lower side. The rolling-pin is made of the same wood, about 7.5 Cm. (3 inch.) in diameter and 25 to 26 Cm. (ab. 10 inch.) long. The pin revolves around an axis, of which one end is fastened and the other has a handle which can be unscrewed.

After the dried board has been well sprinkled or dusted with the conspergent powder, a portion of the pastille-mass is cut off, made into a cake, and flattened with the hand, dusted with conspergent powder, and spread out with the rolling-pin into a uniform mass. As the ledges on the sides of the board offer a resistance to the pressure of the rolling-pin, the thickness of the layer of the pastille-mass is necessarily equal throughout. The surface of the mass is now again to be sprinkled with conspergent powder, which is rubbed over with the palm of the hand, and the mass is then punched out with the pastille-maker. If it is not desired to make the pastilles with a device or the name of the maker, the pestle of the pastille-maker is removed, and the punching process continued, without shaking out the pastilles which may be adhering to the sides of the cylinder, until the latter is filled. This, of course, is only practicable when a conspergent powder is employed in the process.

PASTILLE-MAKER with spring and adjustable screw. This instrument varies in size and circumference. It differs from the simple pastille-maker in that, by means of it, pastilles can be punched out, of any desired definite weight and thickness, and the use of the rolling-board with side ledges dis-

pensed with. The pastille-mass is spread out on any smooth, powdered surface, such as a slab of marble or a board, by means of the rolling-pin, to a thickness slightly in excess of that which the pastilles are to have. The mass is then punched by the pastille-maker, and the lever on the side being pressed, the pastilles are thrown out and laid on a plate to dry. The pastille-maker consists of a cylinder of plated copper, c c, surmounted by a wooden knob, b, fastened to it by means of two little screws. The knob b is bored lengthwise through its centre, and the aperture closed with an adjustable screw a. According as this adjustable screw is moved up or down, the play of the stamp e d is determined, and the space below the stamp which is to be filled by the pastille is likewise thus regulated. The spring f causes the lever g to force the stamp e d upwards against the adjustable screw a. On the other hand, if the lever g i, at the point i, is pressed toward the knob b, the stamp is pushed downwards, and the pastilles which have been pushed out are forced out of the bottom of the cylinder. In using this instrument, it is necessary to wipe off the lower end frequently, and dip it into the conspergent powder during the process of cutting the pastilles.

The DRYING OF PASTILLES made of powdered sugar requires care. The



Rolling Apparatus for Pastilles.

freshly made pastilles are first to be dried for at least an hour at the ordinary temperature of the air, and then exposed to a heat of about 25°. After the lapse of an hour, they are usually dry enough to be dispensed. Thus 10 to 50 pastilles can be made up in two hours. Pastilles intended to be kept in stock should be dried for an entire day at the ordinary temperature, and then placed in a temperature of about 25°, in which they usually dry thoroughly in several hours. A higher temperature frequently injures the smooth appearance of the pastilles.

SIZE OF PASTILLES. If the prescription leaves the determination of the weight or size of the pastilles to the dispenser, he should make them of the weight of about 1.0 gramme (15½ or 16 grains).

R Calomelanos 1.0
Sacchari q.s.
M. f. pastilli 20. D. S.

R Pastillor. Calomelanos numero 20. D. S. (ää 0.05 = ⅙ gr.)

In this prescription the dispenser has to make pastilles of about 1.0 gramme weight, from 1.0 gramme of calomel, 17.5 grammes (4½ 3) powdered sugar, 0.1 to 0.2 grammes (2-4 gr.) powdered tragacanth and 1.7 to 1.8 grammes (ab. 25 grains) *aqua glycerinata*.

Pastilles containing poisonous drugs should bear a distinctive mark

The sign for pastilles of morphine is, for instance, an M with a cross over it, as M, but not "Morphine," since the

physician is only too often placed in such a position that he does not deem it advisable to allow the patient to know the name of the medicine he administers.

Tablets of santolin also belong to the class of powerful drugs, and require a sign such as shown in the accompanying cut. [Pastilles of morphine are a form of administration of this drug which ought not to be encouraged, and is, in fact, but rarely used in this country.—Ed. AM. DR.]

CONSPERGENT POWDER for pastilles. If the pastilles are colored, lycopodium is generally used, also a mixture of lycopodium with very finely powdered cinnamon. For colorless or white pastilles, fine, thoroughly dried, wheat-starch powder is generally employed, or even a very fine powder of *talcum venetum*.

PASTILLES OF CACAO MASS (*chocolate mass*) are prepared by triturating the medicinal substances with from ten to twenty times its quantity of cacao mass, until it becomes a fine powder, and adding to the mixture the remainder of the cacao mass, rendered semi-fluid in the water-bath. The mass, half cooled, or at a temperature of about 40°, is then treated by the pastille-divider and the pastille-maker in the same manner as the pastilles of sugar. Compounds which are prone to decompose, as well as very bitter or nauseous substances, and especially alkaline salts or earths are usually made up in pastilles of cacao. Alkaline substances produce changes in sugar, and well dried pastilles containing them become soft or tough on being kept. A limited number of pastilles, which would be used up by the patient in two or three days, may, however, be made with sugar.

The FINISHER* is composed of the rolling-disk and a plate, both parts of which are of hard wood, generally of the pear-tree. The rolling-wheel (b) is a turned disk, about ½ inch in thickness, 3½ inches in diameter, with a projecting rim of ⅙ inch, and with a strong button (a) as a handle. The other part is a round plate (c), which is about (1.6 millimeter) 0.123 inch in thickness, and with a diameter of about an inch, and a length of from 4½ to 5 inches. The height of the projecting rim is about from .15 to .19 of an inch. The disks and plates are so arranged that the parts project vertically upon the circular surfaces. The finisher is not painted or polished, as the surface which is to come in contact with the pills should possess the requisite roughness. The wood should be thoroughly dried, so as to have no cracks or fissures.

The top should be large enough to be conveniently grasped in the hand, and fill the closed palmar surface thereof.

Vial's pill-finisher consists of three parts: a disk to roll the pills on; a movable wooden ring, and a wooden disk with a handle fitting into it. The two latter parts form the real pill-maker.

The material employed in the manufacture of these machines is compressed wood, which is exceptionally hard and does not absorb humidity, so that there is no change in shape from absorption of moisture, as it otherwise would be particularly prone to in washing.

The fact that the disk is not fastened to the ring, but simply fits into it, prevents the pills from rolling out.

The practical compounder can dispense with all these devices, as he needs only an empty, round paste-board box, about 2½ inches in diameter,

* See illustration of pill-finishers in December number.

with unglazed bottom, which is used as finisher. The pills are either put into a perfectly flat wooden plate, or upon a piece of hard, smooth paste-board about 8 inches square, upon which they are confined by laying upon it another square piece of paste-board only about $\frac{1}{4}$ inch thick, with a central hole of about $\frac{1}{4}$ inches in diameter.

The 30 or 60 pills made by the machine are put on the wooden plate, sprinkled with conspergent powder, put under the rolling disk and rolled in small circles. It is very easy to feel if any pills stick together, and to separate them with the fingers.

A number of pills that would require about an hour to be made up with the fingers, can be turned out with the finisher in ten minutes, while it is impossible to make them so round and smooth with the fingers. There are finishers for 1, 2, and 3-grain (or 0.6, 0.12, and 0.2 Gm.) pills, and marked I., II., III. For the 1-grain pills the rim is 3 millimeters in height, that for the 2-grain pills 4 millimeters, and that for the 3-grain, 5 millimeters.

Whenever the rolled pill-mass is adhesive, conspergent powder should be shaken over it; on the other hand, there are pill-masses that refuse to be rolled, but glide to and fro on the rolling-board. In this case the rolled mass is slightly moistened with water, or preferably, rubbed with wetted blotting paper.

CONSPERGENT POWDER (*Pulvis conspergens*). Pills are strewn with conspergent powder to conceal their taste and to prevent them from adhering. In case no powder is specially prescribed, *lycopodium* is always used.

Cinnamon, liquorice root, fennel, orris root, starch, etc., in fine powder, are also used. If vanilla is ordered as conspergent, a trituration of 1 part of vanilla and 9 parts of sugar of milk is employed. Cane sugar is not suitable for conspergent powder, owing to its hygroscopic qualities.

Substitute for Volumetric Solution of Iodine.

In making volumetric solution of iodine, it is common to use dry, resublimed iodine, and to assume that the latter is, under these circumstances, sufficiently pure to answer as a starting point. This is, however, not always the case; moreover, the volatility of iodine, either in substance or in solution, is liable to render the volumetric solution more or less incorrect.

It has long been known that bromates are decomposed by mineral acids, with liberation of free bromine. This reaction is, in fact, utilized in the U. S. Pharmacopoeia to examine bromide of sodium and bromide of potassium for their freedom from bromate. And upon this reaction Dr. Kretschmer now bases a process which will eliminate one source of error from volumetric determinations with iodine. He points out that bromate of sodium, in presence of a sufficient amount of iodide of potassium, when treated with a mineral acid, liberates a quantity of iodine equivalent to the oxygen contained in its molecule. In fact, the mineral acid decomposes the bromate, setting free its bromine; this liberates its equivalent quantity of iodine, and takes its place, and the liberated iodine is then available for the volumetric determination.

Bromate of sodium may be easily obtained pure, and in a crystalline condition, by adding an excess of bro-

mine to hot solution of soda, evaporating and separating the first crop of crystals. This crop, consisting of strongly shining tetraeders, should be recrystallized from water, which will at the same time eliminate all traces of chlorine. When perfectly free from bromide, they may be rubbed to powder, and dried. They will stand a temperature up to 180° C. without decomposition.

One gramme of bromate of sodium, according to the author's experiments, replaces 5.04 grammes of iodine. Or 1 gramme of iodine may be replaced by 0.1984 gramme of bromide of sodium. The volumetric solution of bromate of sodium, therefore, is prepared by dis-

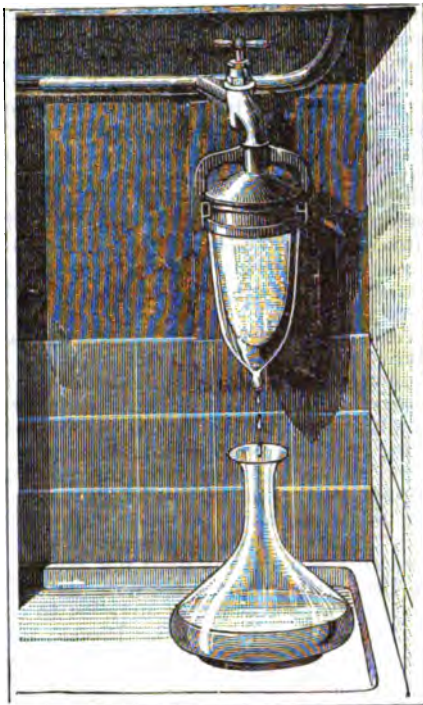


FIG. 1.—The Mallié Filter complete.

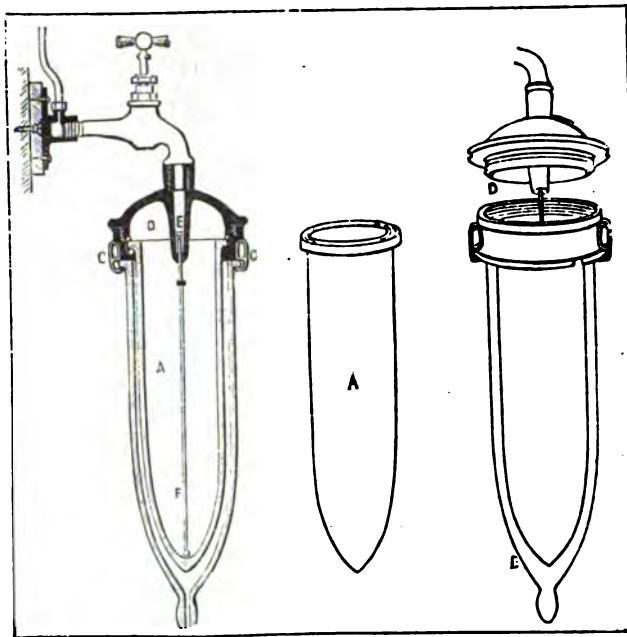


FIG. 2.—Appearance of the apparatus with its several parts detached.

solving 2.512 grammes (or, when bromine = 79.8 : 2.508 grammes) of bromate of sodium in water to 1 liter, and is then is exactly equivalent to the one-tenth normal volumetric solution of iodine containing 12.66 grammes of iodine in the liter.—After *Zeitsch. f. Anal. Chem.*, 1885, 546.

Oil of Benjamin.

For this, which was an empyreumatic oil prepared by destructive distillation of the residuum of benzoic acid, a mixture is factitiously given of

Oil of Cade (or preferably)
Oleum Rusci..... 1 part and
Oil of Sesame or Cotton-
seed Oil..... 9 parts.

—*Chemist and Druggist*.

THE MALLIE FILTER.

IN the preceding volume of the *AMERICAN DRUGGIST*, reference has been made to this filter. We are indebted to a recent number of *La Nature* for an illustrated description of it. Figure 1 shows the filter complete and connected by a faucet with the service pipe. In Figure 2, A represents the porcelain vessel which is the essential feature of the apparatus. B is the glass outer case which is made sufficiently thick to withstand pressure and hard usage. C is the screw by means of which the parts are held together, and E the spout by which the apparatus is affixed to the faucet. The portion of the cap indicated by D forms an air-chamber in which, depending upon the force of the water-supply, air is compressed and serves by its elasticity to prevent breakage by sudden shocks, and to increase the amount of air absorbed by the water in its passage through the filter; for, on leaving the filter by the orifice at the bottom of the glass vase, the water is turbid owing to the amount of free air-bubbles contained in it. When, after a little time, this excess of air has escaped, the water is left admirably limpid and thoroughly charged with oxygen.

The simplicity of the filter permits it to be cleaned of impurities in a few minutes, and experiments made by Mr. Girard, Chief of the Municipal Laboratory of Paris, prove that the water, upon leaving the filter, is physiologically pure, entirely free from germs of all kinds, and essentially adapted for all domestic uses.

The form of filter here shown is 30 centimeters high, and will purify from 60 to 80 liters of water daily, according to the pressure. A set of three filters will give a supply of about 250 liters per diem, and a set of six, from 600 to 650 litres per diem.

Destruction of Moss in a Greensward.

In humid soils, moss develops frequently in grass which is not very old, and completely smothers it. *La Revue horticole* proposes the following method to get rid of this invading vegetation.

In the month of July, when it is very dry, have the lawn cut at times with a sickle, or with a lawnmower—grass, moss, and everything close to the ground. The sun's rays will in a few days destroy the roots of the mosses which thrive at the top of the earth. The greensward will suffer very little, but it will be immediately free of all parasitic vegetation. If the necessary care be given, that is, by copious waterings, in a very short time it will become green and thicker than ever. It is not to be forgotten that in sowing lawns, if powdered lime be cast upon it, the mosses will soon be completely destroyed.

Shoemakers' Burnishing Ink.—

B Extract Logwood..... 2 oz.
Tinct. of Iron..... 2 fl. oz.
Sweet Oil 2 fl. dr.
Diluted Alcohol..... O. i.
Mix.

Or

Extract Logwood..... 4 oz.
Bichromate of Potash,
Ferrocyanide of Potash.. 5& 12 gr.
Rain Water Cong i.
Mix.

In either case apply with brush and immediately burnish with hot iron. Dries black and shiny.—*National Drug.*

The Comparative Strength of the Commercial Aconitines.

Dr. J. BUNTZEN and Mr. H. P. MADSEN, of Copenhagen, have lately published the results of a series of investigations on the comparative strength of the preparations of aconite and the aconitines of the market, which has been given in abstract by Prof. Th. Husemann, of Göttingen, in the *Pharm. Zeit.* (No. 82). As this contains many interesting facts, some of which are entirely new, we translate the more important portion of the paper.

Buntzen and Madsen determined the strength of the several preparations by ascertaining the smallest quantity of each required to kill frogs (*Rana temporaria*) under proper precautions to eliminate errors. The following kinds of aconitine were used:

1. Pure, crystallized aconitine, prepared by Petit after Duquesnel's process.
2. Crystallized aconitine of Merck.
3. Amorphous aconitine of Merck.
4. Crystallized aconitine of Gehe.
5. Amorphous aconitine of Gehe.
6. Crystallized aconitine prepared by Madsen, separately from French (Vosges), and Swiss aconite.
7. Crystallized aconitine from Japanese aconite.

8. Crystallized aconitine from Himalayan aconite (*Aconitum ferrox*; bish).

Regarding the last-named aconitine (8), the authors found that it is much weaker than that prepared from the Japanese drug. This inferiority is supposed to be due to the fact that the tubers have been exposed to too great a heat in drying.

Incidentally, Prof. Husemann points out a misstatement made by the authors, in saying that Morson's (English) aconitine is prepared from *Aconitum ferrox*. Morson himself asserts distinctly that it is prepared from cultivated *Aconitum Napellus*.

How much the activity of aconitine depends upon its degree of purity, is shown by Madsen's results. Aconitine prepared by him from French (Vosges) and Swiss tubers was at first of feeble action, and only gradually, while passing through seven processes of purification, did it acquire the greatest potency. Even Japanese aconitine, purified but four times by Madsen, was considerably stronger than a japonitine previously prepared by Harnack and Mennik. Aconitine from Himalayan aconite produced only a slight intoxication in doses of 1.67 milligramme (more than twice the fatal dose of the preceding); if given in the lowest fatal dose of japonitine, it produced no poisonous symptoms whatever.

The authors asserted, in contradistinction to previous observers, that aconitine from Swiss tubers is not any stronger than that produced from French tubers, and that any difference in activity previously found is to be ascribed solely to the greater or lesser degree of purity of the extracted alkaloids. Prof. Husemann is unwilling to regard this statement as convincing, since the authors fail to prove that they experimented with undoubted specimens of Swiss or French tubers.

Aside from the uncertainty about the origin of the tubers experimented with, Buntzen found the aconitine prepared by Madsen from the "French" aconite to be even more powerful than that prepared from the "Swiss" tubers (which had been obtained from Gehe & Co.).

This strong alkaloid obtained by Madsen, however, does not by any means attain the upper limit of activity. It has, namely, been shown by Buntzen that Gehe's amorphous aconitine is much more powerful, being able to kill frogs in doses of one-quarter milligramme ($\frac{1}{4}$ grain).

The several aconitines, according to Buntzen, may be classified as follows, beginning with the most active.

1. Gehe's amorphous aconitine (smallest fatal dose $\frac{1}{4}$ milligr.).
2. Aconitine prepared by Madsen from French aconite.
3. Gehe's crystallized aconitine (smallest fatal dose $\frac{1}{4}$ milligr.).
4. Petit's cryst. aconitine.
5. Merck's cryst. aconitine.
6. Aconitine prepared by Madsen from Swiss aconite.
7. Duquesnel's crystallized aconitine (not fatal yet in doses of $1\frac{1}{2}$ Mg.).

These results are of the greatest importance for practical therapeutics. In the first place, it appears from the preceding statements, as well as from the clinical experiments of Dr. Seguin (of New York), that Duquesnel's laboratory turns out batches of aconitine of varying activity. A preparation of which, in some cases, 0.8 Mg. ($\frac{1}{12}$ grain) have been easily borne by patients, while in other cases $\frac{1}{4}$ Mg. ($\frac{1}{12}$ grain) has produced decided symptoms of intoxication. These different aconitines, all appearing under Duquesnel's name, cannot, therefore, be of equal purity.

Another fact deducible from the above-named results is this, that Germany at present produces the most powerful aconitine. But, unfortunately, this very substance, instead of being crystalline (and therefore more likely to be uniform), is in form of an amorphous powder ("Gehe's amorphous aconitine"). Now, while this is a highly interesting body toxicologically, it certainly does not belong, in Prof. Husemann's opinion [as well as own], into the list of articles to be prescribed and dispensed. Physicians [on the continent of Europe] have become gradually accustomed to prescribe bitter almond water or cherry laurel water in place of hydrocyanic acid. Just in the same way, they should become accustomed to prescribe tincture of aconite in place of aconitine. This will be not only cheaper for the patients, but at the same time safer. Of course, the diversity in the strength of tincture of aconite in different pharmacopoeias will have to be taken into account, or gradually eliminated, to prevent confusion. So, for instance, the strength of tincture of aconite of the U. S. Pharmacopoeia is four times that of what it is usually in Europe.

Madsen assayed a series of tinctures prepared after the Danish, German, and U. S. Pharm., and found them to yield:

Tinct. Aconite.	Impure Aconitine.	Purified Aconitine.
Danish Pharm. (from leaves).....	0.1784%*	0.1328%
German Pharm.	0.0304%	0.0182%
Germ. Pharm. (prep. from French tubers).....	0.5960%†	0.1320%
U. S. Pharm. (from French tubers).....	0.1900%	0.1650%

Carbolic Acid and Chloral.

WHEN carbolic acid and chloral are mixed together in such proportions that the quantity of carbolic acid does not exceed 1.7 parts for every 1 part of chloral, the resulting mixture—which is a liquid, like that formed from camphor and chloral—is soluble in water in all proportions. If more carbolic acid is present, the latter will separate upon the addition of water. The above-named proportions correspond to 3 molecules of carbolic acid and 1 molecule of chloral. If the mixture is heated, the constituents separate.—A. BOURIEZ in *Nieuw Tijdsch. v. d. Pharm.*

* The impure aconitine prepared from the tincture of the leaves was almost inert.
† This figure is probably a mistake.—Ed. Am. Dr.

Blotting Paper for Removing Ink Spots.

In order to take away ink spots from paper, it is customary to use a blotter, which freely soaks up the liquid, and if by this means all traces of the ink do not disappear, recourse is had to a salt or some substance having the property of bleaching paper; for instance, oxalate of potassium, etc., to attain this end. A simple modification of this renders still better services.

Take a thick blotting paper or board, steep it several times in a solution of oxalic acid or oxalate of potassium. Then dry it. If there is a spot to be taken away, apply the blotter, which has been prepared in this fashion, to the same. In proceeding thus, the ink is entirely removed. The blotter drinks up the ink, and whitens the paper at the same time.—*La Nature*.

India-Rubber Varnish.

THE scraps of vulcanized rubber, which is a mixture of rubber and sulphur, and which dealers in hard rubber goods can deliver in abundance, can furnish, by doing as follows, an excellent varnish, which dries promptly. Its color can be varied from a golden-yellow to the deepest brown. It sticks very well to metals, and can be employed on electric apparatus.

These clippings are put into a deep earthen pot, covered with a tight lid. The pot is set upon hot coals. At the end of five minutes, take the pot off from the fire, and see if the material is melted. While the pot is on the fire, take care not to lift the lid up, because the vapors which would be thrown off take fire easily. After the rubber is all melted, so that it can be poured out, and there are no more whole pieces, which can be discovered by fumbling through the mass with a large file, pour it into a flat tin basin. This basin should be rubbed with grease beforehand, and, after the mass is cooled, it is readily detached. Then break it into pieces, put it into a large bottle, pour on some benzol and rectified spirits of turpentine, and shake the mixture up several times.

The solution being complete, pour out the liquor to get rid of the impurities, some hardened rubber, which remains at the bottom, and a very limpid, beautiful, and excellent varnish is obtained.—*La Nature*.

Varnish for Cleaning Wood, Marble, and Oil-Cloths.

Take 80 parts.....Lemon juice.
400 ".....Linseed oil.
64 ".....Potato-lees (fecula),

Put into a bottle, and shake well before use.

Spread this mixture with a piece of woollen cloth upon the article to be cleaned, then rub, and finally wipe with a clean rag.

Impermeable Wrapping Paper.

DISSOLVE $1\frac{1}{2}$ lb. of white soap in a quart of water; then dissolve 2 oz. of gum Arabic and 6 oz. of glue in another quart of water. Mix the two solutions; warm the mixture; dip the paper in the liquid; pass it between two rolls (a clothes-wringer, for example), and put it to dry. In default of rolls, hang the paper up that it may drip well, or, better, pass it between two sheets of dry paper. Then let it dry in a mild temperature.—*La Nature*.

To Bleach Ivory.

IVORY is bleached by exposing it to the sunlight for some five or six months. But if it have a light coating of turpentine beforehand, it will bleach in three or four days.—*La Nature*.

HOW TO FORM AN HERBARIUM.

THE *Scientific American Supplement* contains the following from *Science et Nature*:

Plants designed for the herbarium should be prepared upon one's return from botanizing, if possible, or a few hours afterward. If they cannot be prepared until the next day or the day after, the plants must be left in the vasculum (Fig. 2), and the latter be placed in the cellar. But it is always best to prepare the plants as soon as possible after gathering them, except in the case of certain species that bloom early in the morning, and soon afterward drop their petals. In such cases the preparation may be deferred until the next morning, when new flower buds will have expanded. The plants should not be all taken out of the vasculum at once (especially if the preparation is to take some little time), but one after another. If desired, all the specimens of the same species may be taken out at once, and then the box should be immediately closed.

The place of preparation should be dry, light, and airy. A large table supported by high horses, and allowing one to work standing without fatigue, is extremely convenient. In excursions to a long distance the botanist is often far from finding such a convenience, however, and has to have recourse to his bed or the floor as a substitute.

Upon the table should be laid, on one side, double sheets of paper; on the other, the driers, and in front, the plants to be prepared. The first thing to be done is to free the plant from the adhering dirt, without breaking the roots or other parts, by light and repeated blows and by the aid of the fingers. This done, one of the double sheets of paper is opened and laid upon a drier, and a specimen spread out upon it in as natural a position as possible. If the plant is longer than the paper, its stem should be bent at a sharp angle near the top of the sheet, care being taken to previously compress or slightly crush the stem where the bend is to be made,

be begun by placing the upper part of it on the paper in such a way that it does not project, and then bending back the main stem so that the roots point upward, but do not rest at all, or but slightly, upon any other organ of the specimen.

Before preparing a specimen that exceeds the length of the paper, there is one essential point to be first examined, and that is what part of it shall by preference be given the most prominence. It is difficult to establish a rule for this, for it is rather a question of tact and experience. With a little practice the student will easily become able to judge what should be done. Sometimes it will be the summit, and

seen without having to turn the specimen over. If the leaves are too numerous, a few of them may be removed; but the removal should be done in such a way as not to give a false idea of their position upon the stem and branches. This may be accomplished by allowing their base to remain. The branches themselves, if too numerous, may likewise be removed in part, a sufficient number being left to give the specimen a form that in a manner recalls the general aspect of the plant. It is useless to add that, while endeavoring to preserve the plant's habit, we should also try to give the specimen a certain elegance of appearance.

As a general thing, the flowers should not be suppressed, unless the inflorescence is bulky. If it be too long, it may be bent as we have indicated with respect to the branches. Moreover, when collecting specimens, those always should, if possible, be selected which, while giving an idea of the general form of the species, are, as regards size, intermediate between the smallest and most robust individuals. In proceeding thus we need not have recourse to suppression or bending.

In the different plants in which the lower leaves exhibit no perceptible difference from the upper ones, two cases present themselves—either the upper part of the stem only or the entire plant may be dried. In the first case, if the inflorescence is developed, we may content ourselves with taking only the upper part of the plant, of the size of the sheet of paper; if not, we may, without inconvenience, cut specimens that shall be one or two times longer than the paper. In the second case, that is, if we desire to have the plant in its entirety, it should be cut 12 x 12 inches, and each part be prepared by itself, and the two be united after drying. This is the best way in which to prepare large plants, such as *Sonchus palustris*, *Epilobium hirsutum*, etc.

The flowers should be prepared with care, and without altering their natural arrangement.

Yet, if the inflorescence consists of too large a number of flowers, and time

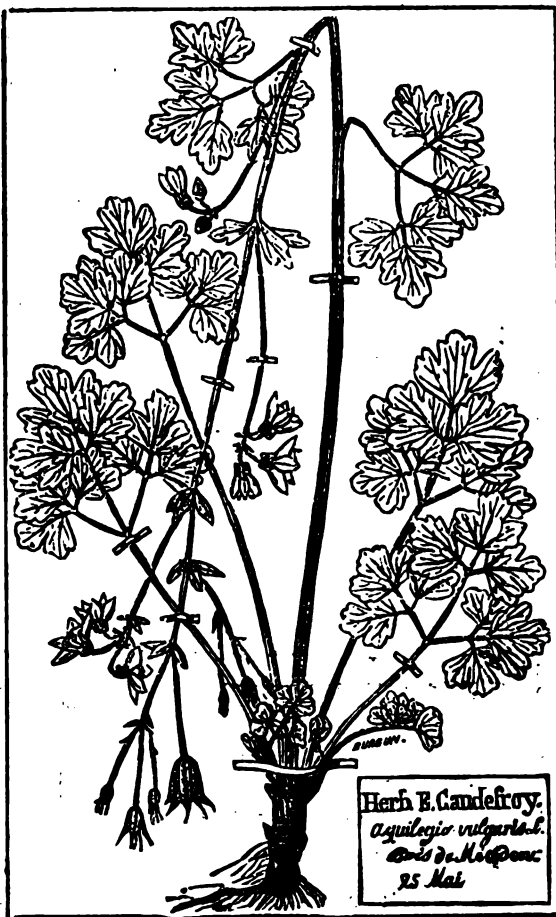


FIG. 1.—Mounted plant.

at other times the middle part or the base, that will be applied to the paper.

After this, the parts that project above and below will be arranged in the most suitable manner. As a general rule, however, the specimen ought to be bent at that part that requires as slight a flexure as possible to be made.

When the specimen is large, a single one may cover the sheet. If we are dealing with a small one, several may be laid down, until the entire sheet is covered. In this case care must be taken that no earth adheres to the roots to soil the flowers of the other specimens.

If the specimens are of such a size that they can be placed side by side, they should be laid in opposite directions, so that the flowers and roots of one shall not come into contact with the flowers or roots of the others.

The leaves should always be spread out with care, that is to say, they should not be allowed to assume other forms than those which they exhibit in nature. Yet, if they are not naturally plane, a few of them should be spread out flat, so that the form and dimensions of the limb may be judged of, while the rest of them should be allowed to retain their natural habit. Moreover, the leaves should never be all arranged with the same surface upward, for it is necessary that both the upper and under surfaces shall be



FIG. 2.—Vasculum.

so as to prevent it from snapping in two. The part of the specimen bent over should be separated as slightly as possible from the rest of the plant, especially if its length necessitates a second bending. Care should be taken to so arrange the specimen that its stem and branches and their primary ramifications do not injure the leaves or other organs of still more delicate texture. If the plant is very branchy at the summit, and, through its generally bushy or fastigate ramifications of nearly equal height, projects beyond the paper, the preparation of it must

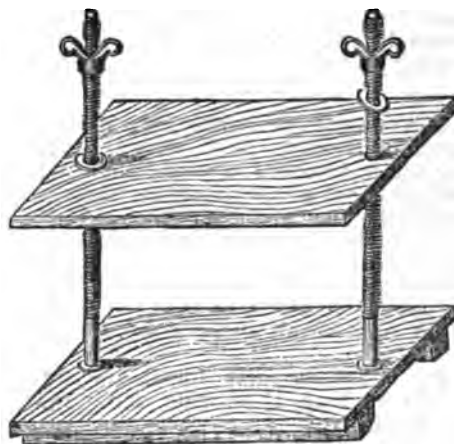


FIG. 3. Herbarium Press.

does not permit of preparing all of them thus, it will be necessary to detach and dry some of them by themselves with particular care. This often becomes necessary, moreover, as a consequence of the bulk or number of the leaves or ramifications, which might prevent perfect desiccation, or break some portions of the flowers.

Polypetalous flowers should be opened and spread out in such a way as to allow their interior to be seen well. If irregular, it will be well to prepare

each of their parts separately. In most cases it will answer to so place them that the special form of each division of the limb may be seen; but, whether they be regular or irregular, a few of them may be detached and dried by themselves, and arranged in the best way possible, either in their entirety, or by splitting them longitudinally. It will prove serviceable in some cases, as for example in the labella of the *Cypripedia*, to interpose in their cavity either cotton or, with a larger number of plants, pieces of paper, so as to hasten the drying, and render the study of them more easy later on.

Thus dried, these flowers may be glued to small sheets of white paper, and put with the specimens to which they belong. In many cases, the study of the various parts of the flower will be considerably simplified by taking like precautions in the preparation of the calyces, stamens, pistils, etc. In the corymbiferous *Compositæ* (the *Carduaceæ*, among others), which sometimes have extremely large capitula, and the drying of which would be slow, and pressing difficult, the heads and stems may be split longitudinally and then separated. This process has the advantage of rendering the herbarium packages less distorted.

When once the specimens are arranged upon the sheet, the latter is closed, and a drier put upon it. Another double sheet is placed upon this and covered with a drier, and so on up to the last.

We may add that it is always extremely necessary to place a temporary ticket in the sheet with each species, giving the name of the plant, the date on which and the place where collected, the nature of the soil, the exposure, and the altitude at which it grew. In place of tickets, numbers may be substituted, corresponding to those of a list in which are inscribed the data that precede.

When the last specimen has been taken from the box, there always remains a certain quantity of earth, which should not be thrown away until it has been examined, as it often contains different things that it is of interest to preserve, such as petals, bulbs, seeds, etc., as well as specimens of minute plants.

The entire collection, having been prepared, is put into the press (Fig. 3). It is essential, if the press be a screw one, like the one here represented, that the first pressure be not too great, but that it be slight at first, and be increased gradually in measure as the drying proceeds.

In a subsequent number, Mr. Robert Palm, of Newark, N. J., writes: Having for a numbers of years collected and prepared plants for an herbarium, I take the liberty of inclosing a sketch of the press which I made for pressing my plants.

A and A' are 16 in. high, 4 in. wide, and 1½ in. thick, mortised at a, a, a, a, to admit cross pieces B and F.

C and C' are supports for B. and are 10 in. long, 1½ in. wide, and 1 in. thick.

B is 15½ in. long and 10 in. wide.

D " 14½ " " 10 "

E " 9 " " 4 "

F " 15½ " " 4 "

G " 20 " " 5 "

H, a plate of iron countersunk to admit bottom of screw I.

I, a one-inch screw, with thread for about 12 inches, and the head M, through which the bar L, slides.

J and K, nuts.

N represents the pads or books under pressure.

The frame of the press consists entirely of wood. I used white pine, and the screw and cross-bar of wrought

iron. A cast iron bench-screw, which can be obtained at any hardware store, will of course answer the same purpose.

It is essential to let the bottom piece B, and the head piece, F into the sides A and A'. The cover D fits loosely, so as to slide easily between the perpendiculars. The top G although not essential, tends to keep the screw from shaking. The nut K merely guides the screw, all the pressure bearing on the nut J.

The press could easily be modified by securing the screw to the cover D by means of a collar, so as to raise the cover upon raising the screw; the cover should then have guides at each end.

For driers, I found pads or books made by stitching pieces of unsized carpet papers—the thick gray kind, which approaches blotting paper in texture, is preferable—very convenient. It is best to make them of four pieces folded once, so as to hold seven plants, or more, if several be placed in each opening.

The plants to be pressed are placed neatly in double sheets of paper, the poorest quality newspaper answering the purpose best, and are then placed between the leaves of the driers; it is best to place within each folded sheet a slip of paper, bearing name, locality,

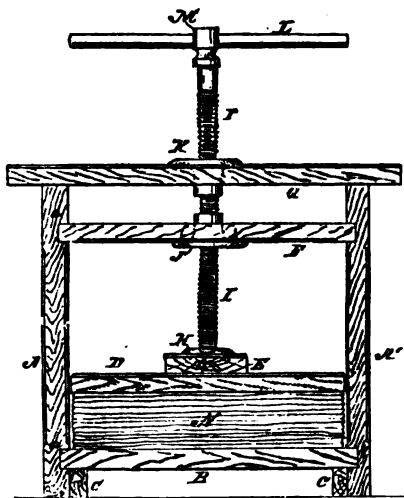


Fig. 4. Palm's Herbarium Press.

and date when found. The plants which remain within the sheet may then be laid away until it is convenient to mount them on proper paper.

In mounting plants it is preferable to mount but one species on the same page, and to have loose sheets, and not a bound herbarium; the plants then can be arranged in their proper orders, and new specimens can always be placed where they belong.

The following is the manner in which I name the specimens:

33. *Mellilotus alba*.
White Mellilot.

Perth Amboy, N. J.
Aug. 5th, 1885.

The number has reference to the order, as arranged in Gray's "Manual of Botany." The number should also be placed on the slip.

Processes for Coloring Iron.

THE *Metallarbeiter* gives the following processes for the coloration of iron. Make a mixture of a solution of 140 grammes of hyposulphite of sodium in 1 liter of water, and of a solution of 35 grammes of acetate of lead in 1 liter of water. Heat to the boiling-point, then plunge in a piece of iron, which takes a blue coloring like that which is obtained by annealing.

If the objects, whether wrought or cast iron, be plunged into melted sulphur, to which has been added a little soot, there will be formed a black coating of sulphite of iron susceptible of a very beautiful polish.

Bleaching and Dyeing Ivory.

ACCORDING to Kayser, ivory is best bleached by first treating it with ether or benzin to remove every trace of fat, then placing the dried object into a mixture of equal measures of commercial peroxide of hydrogen solution [containing about 3 per cent by weight of H₂O₂, and known in trade as "of 10 volumes"] and water. They are allowed to remain in this until the proper effect has been produced, when they are removed, washed with water, and dried.

When ivory is to be dyed, it must first be deprived of grease or fat by ether and benzin, then treated for two minutes with water containing 1 per cent of hydrochloric acid, after which it is placed into one of the following solutions, previously warmed, and left there for ½ to 1 hour:

1. *Red*: 1 part of fuchsine in 300 parts of water, mixed with 10 parts of diluted acetic acid or vinegar.

Or, 2.5 parts of eosine in 500 parts of water, with 1 part of tartaric acid.

2. *Violet*: 5 parts of methyl violet in 1,000 parts of water, with 3 parts of tartaric acid.

3. *Blue*: 2 parts methylen-blue.

4. *Green*: 3 parts of Victoria-green or "brilliant-green" in 2,000 parts of water, with 100 parts of vinegar.

5. *Yellow*: 4 parts of naphthol-yellow in 1,000 parts of water, with 150 parts of vinegar.—*Chem. tech. Central-Anz.*

Lotions for "Blackheads" in the Skin.

AFTER having expressed the fatty matter with the fingers, use some slightly alkaline lotion to dissolve the excess of fatty matter and prevent its accumulation in the little glands. The following solution is very appropriate:

Water..... 300 grammes.
Borax..... 10 "
Ether..... 10 "

It can be diluted with half water.

A little later some astringent lotion will dry up or lessen the sebaceous secretion, and will prevent the too rapid return of the trouble.

It is also well not to neglect the use of toilet soap on the face. Water from soapwort or Panama wood cleans the skin as well, if not better, and has not the defects and inconveniences of soap.

Add to this a very moderate use of wine, coffee, and tea, an absolute suppression of cordials. Avoid fatiguing exercises, tarrying in hot or smoky places, great nervous excitements: conditions which favor the exaggeration of the glandular secretions of the face.

Instead of squeezing the "blackheads" with the fingers, it is better to press the little square hole of a watch-key upon the spot.—*La Nature.*

Silvering Paste.

Nitrate of silver..... 13 parts.
Common salt..... 50 "
Cream of tartar..... 30 "

Grind (dry) these three substances very finely in a mortar, then triturate with a little water to form a homogeneous paste; keep the paste sheltered from the light.

To silver, rub the copper or brass article with the paste, previously separating the verdigris from the copper, until it is thought that the layer of silvering is thick enough; then wash and wipe hard with a chamois skin. In replacing nitrate of silver by cyanide of silver, a dry powder is obtained, which is to be moistened when used. But it is more dangerous to use.—*La Nature.*

A CONVENIENT BLOCK FOR BLOWPIPE WORK.

THOSE who have heretofore used a piece of charcoal on which to melt small specimens of metal with the blowpipe will see at a glance the advantages of the improved soldering, melting, and ingot block herewith illustrated. It is made of homogeneous asbestos, with a narrow strip of wood on each side to protect the hands from the heat, and with a thin coating of whiting in the bowl to prevent borax or other flux from adhering. The asbestos is not only itself almost entirely unaffected by the heat, but it is so poor a conductor that one can hold this little block, about six inches long, in the hand for a sufficient time to conduct any ordinary melting without inconvenience from the block becoming too hot to hold. It is also so porous that an article can be readily fixed on the block in any desired position with pins or other fastening, as shown in Figs. 1 and 2, where a ring and watch case are shown affixed in convenient position for an ordinary soldering operation, as the work is done by jewelers.

Fig. 3 shows scraps of metal in the bowl with the blowpipe flame directed upon them, and Figs. 4 and 5 give the block itself in different positions. Connected with the bowl by a narrow inlet is a shallow depression, into which, on holding the block vertically, with a small asbestos cover pressed down by the thumb over this depression, the melted metal will run, and form an ingot. Fig. 4 shows such an ingot as being removed, and the other views clearly illustrate the varying details, Fig. 1 showing the asbestos cover set vertically just beyond the apex of the flame, to better concentrate the heat on the work. Asbestos board has heretofore been used to a considerable extent by jewelers, several thicknesses being united to form a base on which to melt metals by the blowpipe; but the different layers did not make a compact and homogeneous mass, and so would curl up and separate which is not possible with this form of melting block. The many uses to which this little device is applicable are so obvious that a detailed reference thereto is hardly necessary.

Apart from its applicability in the trade of the jeweller and silversmith, and in various other kinds of fine soldering work, chemists and mineralogists will at once see in it an extremely convenient means of making many tests which have heretofore been possible only in a much more roundabout way, with more complicated apparatus, and generally at considerable expense. It is so simple a thing to fit up a blowpipe, with which fragments of almost all the metals may be melted with the heat from even a common tallow or wax candle, that there is no more convenient way of making many most interesting and valuable experiments. —*Sci. Amer.*

Paper almost Incombustible.

TAKE 1 part alum to 3 parts water, dip the paper twice into this solution, in a boiling state, and let it dry.

Curiosities of Medicine in Louisiana.

A RECENT writer in the *New York Daily Tribune*, who signs himself LOFCADIO HEARN, gives a curious account of Creole medicine, as well as a description of certain peculiarities in the types of prevalent diseases. After referring to the influence of Voodooism in the popular treatment of maladies, he says: Among several curious remedies for which I had to thank these mysterious people I will cite only two. The first was a cure for bilious fever, which cure was brought to me in a small earthenware jug, piping hot. It was a drink which had a reddish color, an agreeable odor, and an unpleasantly bitter taste. I was told to let the fluid cool before drinking, and not to be frightened at the results, which proved alarming, for dizziness and difficulty of breathing were among them. But the draught restored me to complete health, and I may say

enough to cover both eyes, and go to bed with the cataplasm well attached by knotting the ends of the linen or cotton folds about the head." This simple egg poultice, thus left to dry upon the eyes, proved in my case remarkably efficacious, although I cannot imagine that there is any special virtue in albumen. I must also state that I recommended the cataplasm with good results in instances where hot or cold compresses had failed, for some reason or other, to reduce inflammation.

Tisanes, or those preparations classified by our Creoles under the general name of teas (*thés*)—being infusions of medicinal herbs obtained by boiling the leaves—occupy a larger place in Creole medicine than do the tisanes recognized by English or American pharmaceutical science as worthy of classification. There are hundreds of them. Some are too familiar to need more than an allusion—such as

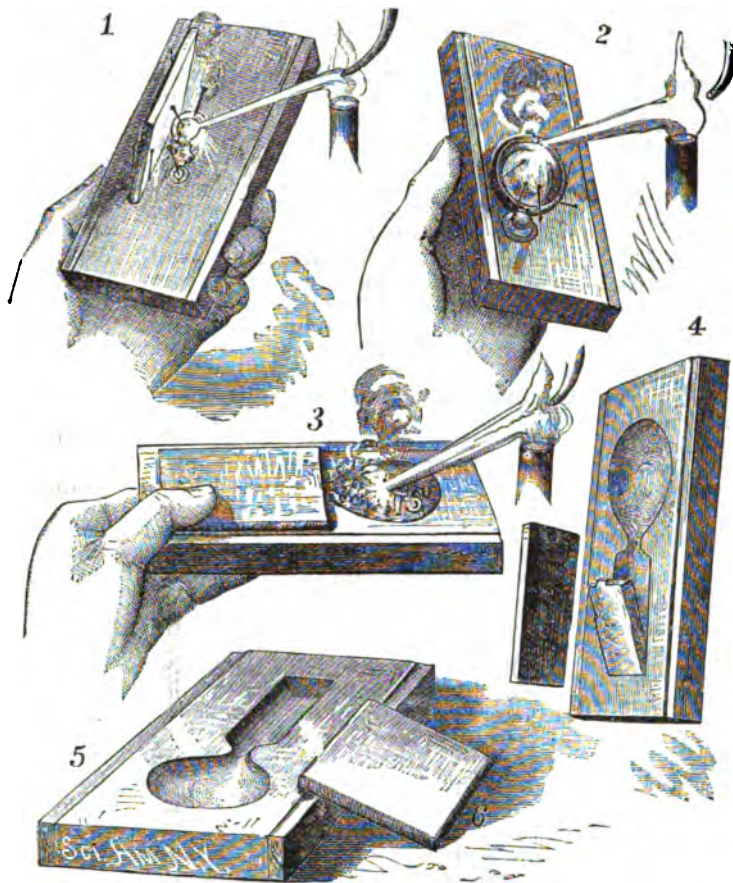
the orange leaf, lemon leaf and sassafras teas. "*Mo pas boi di thé pou fieve li*" (I'm not going to drink tea for his fever), is a Creole proverb referring, not to tea proper, which is not a favorite beverage with our native French-speaking population, but to those warm herb infusions administered in fever.

For the treatment of chills and fever, several queer tisanes are recommended: 1. Tea prepared with the leaves of the pimento (pepper plant); 2. thick black coffee mingled with fresh lemon-juice, to be taken three times a day; 3. snake-root (*Serpentaria*) in whiskey—I do not know how strong the infusion is made; 4. tea made from the leaves of the *cirier-batard* (*Myrica Gale*), a small cupful to be swallowed three times a day. In addition to these hot drinks, alternated sometimes with draughts of claret or spiced beer, well heated, the patient may be ordered to put cayenne pepper in his shoes every day for nine days. In the absence of quinine or other recognized febrifuges, some of the above

remedies are not to be scoffed at. The plant called by our Creoles the *cirier-batard* has, moreover, been utilized in various ways by regular medical science, owing to its astringent qualities. Its aromatic properties are said to have a purifying effect upon the air of the swamps, which it loves. In North America its geographical range extends from Louisiana to Greenland. The roots of the *Myrica* contain so much tannin that they can be utilized with success in the manufacture of ink.

But the most interesting fact contained in the above samples of empiricism is the mention of lemon-juice. Lemon-juice as a remedy for certain forms of fever was known to the Creoles long before Tomasso Crudelli discovered the reason of its value, and advocated its use in the malarial regions of Italy. Only at the last meeting of the International Medical Congress, held at Copenhagen, the discoverer of the *bacillus malariae* strongly recommended the planting of malarial regions with lemon trees, and addressed the learned body with success on the merits of lemon-juice as a febrifuge.

Coffee, considered a febrifuge in the domestic medicine of most hot countries, is administered largely in typhoid



Asbestos blowpipe block.

that I even felt unusually well for several months subsequently. I wanted to obtain the recipe from the negress who prepared the medicine; but this, to my surprise, she refused to give even in exchange for what I believed to be a rather handsome remuneration. Furthermore, she declared the medicine was *bien dangereuse*, that I could not use it without instructions, and that I could not find "the plant." I knew there were at least four ingredients in the preparation; but the color and odor, at least, were not due to any very unfamiliar simples.

The second remedy was a very simple one for inflammation or congestion of the eyes, and was told me by an old colored woman who had the reputation of being a Voodoo, but whom I never suspected of belonging to that confraternity. She was able to comprehend the interest I felt in Creole folk lore, and collected for me a number of little songs and proverbs in the patois. Her recipe was this: "Take a fresh Creole egg [egg laid in Louisiana], separate the yolk carefully from the white, and then beat up the white into a light, fine foam. Then take a strip of cotton or linen, about six or eight inches wide; fold up the egg-foam in it, so as to form a cataplasm wide

fever; but the infusion is made with the green berries in whiskey, a dose three times a day. To alleviate the cerebral symptoms, a live pigeon is cut open, and the warm, bleeding surfaces applied to the head.

Leaves of the lettuce (*Lactuca*) are boiled to form a tea, said to be very efficient in cases of sleeplessness. This lettuce-leaf tea is administered in large quantities before going to bed.

Geranium-leaf tea, a delightfully fragrant beverage, is frequently given as a remedy for nausea. The interior of a fowl's gizzard, boiled with tea, is also recommended.

A cold in the head is treated in many ways, and also has its own special tizane—a sort of celery-leaf tea. The tea is sweetened with honey, and a few drops of paregoric are usually added. Among other remedies, I may mention doses of castor oil warmed with molasses; also roasted onions, with molasses and butter, to be swallowed before retiring; and finally, a gargle made with olive oil, honey, vinegar, and a little paregoric.

Boiled leaves of the honeysuckle are said to make an excellent gargle for sore throat. Parsley leaves in vinegar are also used exteriorly. Another exterior application consists of a white onion roasted in the embers, then cut in half, and each half applied to the neck until cold. This operation is repeated three times each night.

The honeysuckle (*Lonicera Caprifolium*) is known to medical practice. The expressed juice of the plant has long been recommended as a remedy for the stings of bees or wasps—to be rubbed into the puncture. The fruits of all the varieties are said to be emetic and cathartic; and some varieties have been used by physicians in practice. The variety called *Periclymenum* has been used in France as a gargle. Is this bit of Creole medicine a colonial inheritance from the mother country?

There are other local remedies for sore throat, of a character altogether too medieval to allow of their being mentioned in print. I doubt, however, if these are Creole; for I have heard of similar medicine among the peasantry of Europe.

Indigestion introduces us to another tea, very fragrant and soothing, made from bay leaves and leaves of the mint-plant. A little whiskey is usually added. Sugar water is also recommended.

Melon-seed tea is given in jaundice, and also in several other forms of disease. But the great remedy is carrot-juice; the carrots are first scraped, then squeezed through muslin. A cup of this juice is believed to be efficacious in the extreme.

For tetanus, cockroach tea is given. I do not know how many cockroaches go to make the cup; but I find that faith in this remedy is strong among many of the American population of New Orleans. A poultice of boiled cockroaches is placed over the wound. In Louisiana this insect (*Blatta occidentalis*) grows to a positively amazing size; and a very few would make quite a large plaster. Oil of copaiba is also recommended to rub the body with in case of tetanus; but there is nothing especially Creole in the use of the latter remedy. Powdered sulphur, salt, and tallow are likewise used as a mixture to rub the person with; and cockroaches fried in oil with garlic for indigestion.

An immense variety of remedies for diarrhoea are known in Creole medicine; I will name only a few. Tea made with an infusion of pecan husks, pecan bark, and the leaves of the pecan tree steeped in whiskey are very popular. This is doubtless due to the astringent quality of the pecan, rich in tannin. Another remedy consists in a hot drink made by roasting rice, and subsequently pouring boiling water on

the grains. Hot water in which toast has been steeped is also given. Flax-seed tea, administered in so many ailments, is recommended likewise. Hot tea made with dandelions is said to be another efficacious cure. Milk and starch intermingled are often taken; also eggshells ground or powdered, and drunk in water. Finally the banana fruit (used otherwise in a hundred ways by our motley population) is advocated as possessing excellent curative properties. The fruit should be plucked or selected green, cut into thin slices, placed in a vessel, softened to a pap by having boiling tea poured upon it, and then absorbed.

As remedies for palpitation of the heart there are other extraordinary "teas." One, to be drunk morning and evening, is made by boiling parsley-root. Another is made with asparagus. A third is prepared with wild sage, "golden rod" (*Solidago odora*), and a plant called *l'herbe à chevreuil* by Creoles, which I cannot at present obtain the botanical name of. This must be taken three times a day.

There is also a tea for rheumatism made from the leaves of the plant called by the Creoles *chou-gras*. An infusion of the berries of the same herb in whiskey is used to rub the afflicted part with. This herb is neither more nor less than the common pokeberry (*Phytolacca decandra*).

Chilblains are not altogether common in Louisiana, where the frosts are light and cold "spells" have rarely a duration of more than three days. Lemon-juice is used to rub the place with. There are several decidedly original remedies for other ailments of the feet. For cold feet it is recommended that the members be wrapped in newspapers, and the socks or stockings pulled on over the paper. This is also said to prevent cramps. For sore feet foot-baths of salt (rock salt) and water, or lye and water, or hot water poured over fresh mint-leaves, or elder-leaves are administered.

There are Creole remedies for headache, which by reason of their savage simplicity seem worthy of an African origin. These chiefly consist in applications to the forehead, temples or head of fresh leaves, which are changed as soon as the leaf begins to dry or wrinkle up. Leaves of the wild plantain are very popular for this method of cure; fig-leaves, elder-leaves, and orange-leaves are also used. But the orange-leaf is usually smeared with lard before being applied. Another remedy is to pour a little hot water, mixed with laudanum, into the ear. Wild plantain-leaves, dipped in cold water, are very often used also to allay inflammation of the eyes, when the fresh skin of a certain fish, or the excellent egg-poultice, is not immediately procurable.

In swelling of the glands of the throat the swollen gland should be well rubbed with tallow; and the tallow smeared on thoroughly, melted by holding close to the skin without actually touching it, the blade of a knife heated in the flame of a lamp or candle. Some say the point of the heated blade only should approach the skin, and that the point should be moved so as to describe a cross immediately over the gland. This seems to be a purely superstitious idea.

In erysipelas a poultice of almond-leaves and rice flour is generally applied to the sore. Almond-leaves, it may be observed, are also considered to possess special virtue and healing qualities in relation to the affection of the eyes.

For overheating of the blood—an imaginary disorder—tea made with the leaves of wild chicory is recommended, but tea made with the leaves of the *patate de Guinée* (potato vine), or leaves of a plant called *hooli* may be substituted. Somebody told me

that *hooli*, or, as he termed it, *ahouli*, took its name from the Spanish *alheti*, or *alete*, a corruption of the Arabic *al-khaili*, "the gillyflower." But I am inclined to suspect an African origin for the word; moreover, the *hooli* shown me strongly resembles the plantain, having a large fleshy leaf, which, when steeped in water, makes the liquid ropy by reason of some viscid secretion. I must leave botanists to decide the scientific appellation of this, as well as of several other queer plants, one of which, bearing a little blue flower, is used to make a tea said to allay nervousness.

A favorite medicament for teething is furnished by the *chien dent*—dog's grass, quitch grass, or couch grass (*Triticum repens*)—which grows wild on many of our New Orleans sidewalks or *banquettes*. An infusion of the leaves is used to rub the infant's gums with.

There is a very funny remedy for ear-ache which is popular among the most ignorant classes of French-speaking colored people, and perhaps among many equally ignorant whites. Of course, the familiar plug of wool or cotton steeped in laudanum is in vogue here as well as everywhere else; but a much more efficacious remedy is alleged to be a plug of *laine-de-nègre* poked into the ear. And the oddest idea connected with the practice is that the wool in question must not be asked for, but must be snipped off the owner's head surreptitiously, in order to render it efficacious. When duly stolen, and moistened with laudanum, the wool never fails to cure!

These recipes may serve to convey some idea of the nature and variety of Creole medicine, a subject much larger however, than this essay can justly indicate, and including much that must be left to the ethnologist and the folklorist to properly utilize. Probably Angelo de Gubernatis might find in Creole medicine-lore some new material for his "Mythologie des Plantes;" but this material belongs to a class of the theme which I cannot at present attempt to touch. It has special interest only to folklorists and those who have the leisure and the opportunity to study the question of African survivals in the West Indies and America. On the other hand, the herb medicine of the Creoles deserves some scientific attention. So far as my limited observation enables me to judge, the most valuable part of Creole medicine has been developed by climatic necessities. Febrifuges, indeed, form the most important portion of this domestic medicine; and the art of preparing these, as well as various sudorifics and diet-drinks, seems to have been evolved by an experience not without serious value.

Coloring Copper and Nickeled Articles.

UPON copper, well cleaned from verdigris, eleven different colorings can easily be obtained, and eight on nickeled articles of any metal, by steeping in the following bath:

Acetate of Lead.....20 Grammes.
Hypo-sulphite of Sodium.....60 "

Dissolve in a liter of water.

Warm to the boiling point, and then dip in it the cleaned copper or nickel-plated articles. At first a gray color is obtained. Continuing the immersion, we next have violet, and then, successively, chocolate, red, etc., until we reach blue, which is the last shade.

Of course, there is a certain knack in getting at a definite point, an intermediary tint. Once obtained, pass a light mixture of white varnish over it, in order to set the color.

The ingredients which enter into the composition of this bath cost only five centimes (about one cent) a liter. The selling price lies entirely on the handiwork and necessary care.—*La Nature*.

IMPROVED WASH-BOTTLE FOR LABORATORIES.

By this simple device the washing of precipitates, and the cleansing of vessels used in the process of analysis, which before required the use of the ordinary wash-bottle, can now be done with much more facility and in a shorter time.

It consists, essentially, of a thin glass flask C, placed about three feet above the level of the working-desk, and closed by a three-hole rubber stopper. Through one of the holes issues a rubber or glass tube D, with rubber connections, descending to the desk and ending in a glass nozzle. Connection is made by a second hole in the stopper with a reservoir bottle A, placed above the top of the wash-bottle. In the third hole is placed a glass tube I, bent at an angle to keep out dust. On filling the flask from the reservoir—the flow being stopped by a pinch-cock—the water is started by suction from below, and the stream through the nozzle can be regulated or stopped at will by a pinch-cock placed conveniently to the hand, the height of the water flask furnishing the pressure, which is sustained by the siphon.

A Bunsen burner, H, can be placed underneath the flask, and the water heated when it is so desired. Hot water, as well as cold, can thus be used in treating precipitates. The large bottles E and F, with the accompanying tubes, show a convenient arrangement for holding and delivering any solution.—H. B. BATTLE in *Sci. Amer.*

Preserving Cocaine Solutions.

In a paper recently published in the *Droguisten Zeitung* (and *Pharm. Z.*) it is recommended to prepare stable solutions of cocaine by sterilizing them. Several methods are suggested.

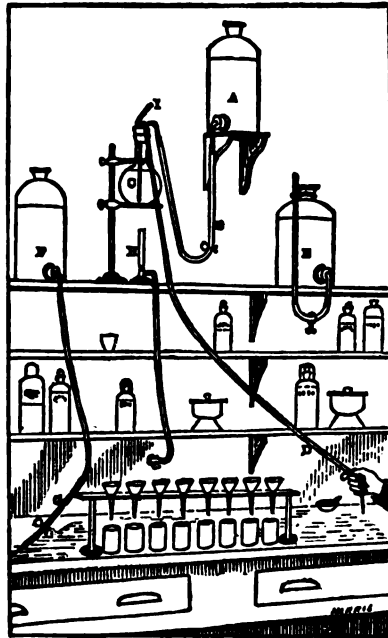
1. Weigh the hydrochlorate of cocaine upon a watch-glass and place this, together with the requisite vials, filter, small glass-funnel, and all other implements which the solution will afterwards come in contact with, into a drying oven, where a temperature of 100° to 110° C. (212°-230° F.) is maintained for several hours. The requisite water is also heated for a like period. The solution is then prepared, filtered while still as hot as possible, and the vials immediately stoppered with tight plugs of pure cotton.

2. In a graduated cylinder weigh the requisite amount of hot water, add the weighed cocaine salt, and after the volume has been marked, add as much more water as will evaporate in the drying oven or on the water-bath in a few hours (about half of the volume of the solution). Then heat on the water-bath until the excess is evaporated and the former level (or the original weight) has been reached. The solution, if clear, may be at once transferred to vials which are stoppered with plugs of cotton previously sterilized by heating at 100°-110° C. Since hydrochlorate of cocaine requires a heat of 185° C. (365° F.) to melt, and does not even decompose then, there can be no harm in sterilizing its solutions at the above-named temperatures.

NOTE BY ED. AM. DRUGG.—Among the substances mostly recommended as preservatives for cocaine solutions are salicylic and boric acids, carbolic acid, thymol, and camphor. Of these, salicylic and particularly carbolic acid have been found, by experience, to be irritating in many cases. Thymol appears to be better in this respect, but boric acid or camphor are unexceptionable. Of boric acid a cold saturated and filtered aqueous solution, or one containing as much as 10 grains per fluid ounce, may be used. Camphor is used in the form of camphor water. When cocaine solution is to be injected hypodermically, it is preferable to

omit the boric acid; in fact, it is always best, in this case, to use a freshly prepared solution containing nothing but the alkaloidal salt and distilled water. But if it is necessary to keep a solution for some time, probably the best way is to add to it a few drops of *chloroform*. This will prevent the development of fungi and will not act as an irritant or antagonistically to the drug. The proper proportions are:

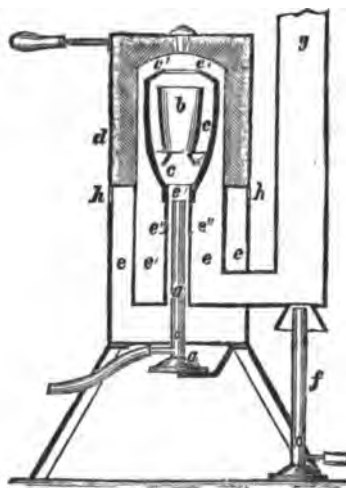
Cocaine Hydrochlorate... 4 parts
Distilled Water, to make 100 "
Purified Chloroform, 2 minims for each fluid ounce.



Laboratory wash-bottle.

The Synthesis of Cocaine.

As was to be expected, such an important organic compound as cocaine, soon after its first appearance, attracted the curiosity of the chemist, and much is already known regarding its relation to other bodies existing alongside of it in the coca leaf, as well as to other substances. More than six months ago already, it was announced that two chemists, Mr. W. Merck and Prof. Skraup, each working independently, had succeeded in converting ecgonin—



Crucible furnace.

the troublesome by-product obtained in the manufacture of cocaine—into the latter alkaloid. Skraup's method yielded only a very small percentage of cocaine. This has now been partly overcome by W. Merck, who starts from anhydrous ecgonin. The method by which the conversion is brought about need not be detailed here, as it is evidently still capable of improvement. It will be of interest, however, to learn that the reproduction of cocaine from its products of decomposition has already been accomplished.—After *Ber. D. Chem. Ges.*, 1885, 2,952.

AN IMPROVED CRUCIBLE FURNACE.

THE apparatus here described has been patented in Germany (No. 30,208) by the "Deutsche Gold und Silber-Scheideanstalt, vormals Roessler," in Frankfort-on-the-Main.

The cold air enters at *h h*, is warmed in its passage through the outer mantle, *e*, by the products of combustion, which pass off through the inner mantle *e'*, then enters the Bunsen burner *a*, and another portion of it passes on the outside of this, thus furnishing enough hot air to completely burn the gas issuing from the burner. The combustion takes place below the crucible *b*. The flame and hot gases pass first through the perforated cover *c'*, then through the outer mantle *e'*, where they give up a portion of their heat to the cold air entering from the outside, and finally escape through the chimney *g*. In order to create a sufficient draft, a separate burner *f* is placed under an opening in the chimney.

Specific Gravities of Some Fixed Oils.

E. DIETRICH has determined the specific gravity of a number of fixed oils in a pure condition, at the temperature 23° C. (73.4° F.). The following are the results:

Olive Oil (Provence).....	0.912-0.914
" " green.....	0.909-0.915
Sunflower-seed Oil.....	0.920
Cotton-seed Oil.....	0.917-0.921
Peanut Oil.....	0.917-0.918
Rape Oil.....	0.918
Sesame Oil.....	0.919
Castor Oil.....	0.964

—*Dingl. Pol. J. and Rep. Anal. Ch.*

Neutralizing Cordial.

Rhubarb, coarsely powd....	2 oz.
Carb. Potassium.....	2 "
Golden Seal.....	1 "
Cinnamon.....	1 "
Sugar.....	4 lb.
Brandy.....	1 gall.
Oil of Peppermint.....	20 min.

Macerate the rhubarb, golden seal, and cinnamon in half a gallon of the brandy for six hours at a gentle heat, transfer to a percolator and displace, first with the remainder of the brandy, and afterward with enough water to complete one gallon of the percolate. To this add the carb. potassium, the sugar, and the oil of peppermint, previously rubbed with sufficient sugar to absorb it. When the sugar is dissolved, filter through paper. The substitution of diluted alcohol for brandy to exhaust the drugs affords a preparation less pleasant, but less expensive and quite as efficient.—*Drug. Circ.*

Lemon Sugar.

Citric Acid.....	2 oz.
White Sugar.....	5 lbs.
Essence Lemon.....	1 dr.
Alcohol.....	2 drs.

Add essence to alcohol, and allow sugar to absorb the mixture. This quantity will make a quart of water into lemon syrup, or two tablespoonfuls will make a tumblerful of lemonade. Or:

Tartaric Acid.....	7 lbs.
Bicarb. Sodium.....	6 "
White Sugar.....	80 "
Gum Arabic.....	2 "
Oil of Lemon.....	1 lb.

Powder, and dry well before mixing. Keep well corked.

Ten grains of tartaric acid pressed into a cake with moist, yellow granulated sugar, dried, and impregnated with a few drops of essence of lemon, will provide a tumblerful of lemonade; but the oil of lemon is apt to become rancid before the cake is used.—*Drug. Circ.*

APPARATUS FOR THE ESTIMATION OF AMMONIA.

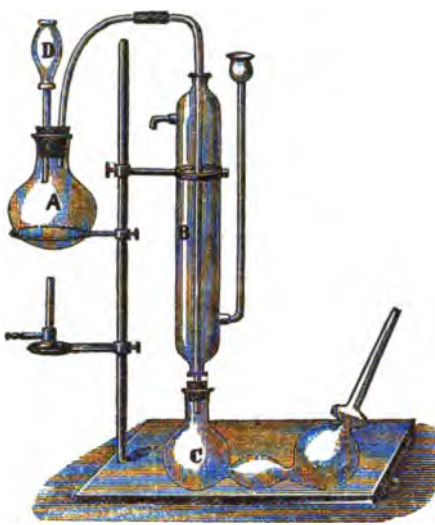
THE apparatus here described has been devised by F. G. Holmes, for the determination of ammonia by distillation. Its special features are the upright condenser, and the absorption apparatus C, consisting of 3 bulbs, each of 2 inch diameter, which are charged with 25 C.c. of one-tenth normal sulphuric acid. The liquid or solid in which the ammonia is to be determined is put into the flask A, together with enough water (say 20 C.c.), if necessary; the flask is then connected with the condenser, and heat applied, so as to drive out most of the air by vapor of water. About 15 C.c. of a 20% soda-solution is then put into the funnel D (the stop-cock of which is omitted in the cut), and enough of it allowed to flow into the flask to cause a slow stream of gas bubbles to pass through the acid in the receiver-bulb C. When all the air has been expelled, no more bubbles will be visible. More soda-solution is now admitted, and the heat continued until the reaction is terminated. If the liquid in the flask becomes too concentrated, a little water may be added. Finally, a current of air is passed through the apparatus, and the amount of ammonia is determined in the receiver by determining the quantity of volumetric sulphuric acid not saturated.—*Chem. News.*

[In using an apparatus of this kind for the determination of free ammonia

was broken. Perhaps this will lead to more care being used in regard to such apparatus in the future; a safety valve is needed just as much as in a boiler.

Australian Tin-Fields.

THESE differ in some respects from those of Perak; for instance, the ore in the latter country is usually found in the granite formations overlaid with lime and sandstone; whereas in Australia, New South Wales, no tin has



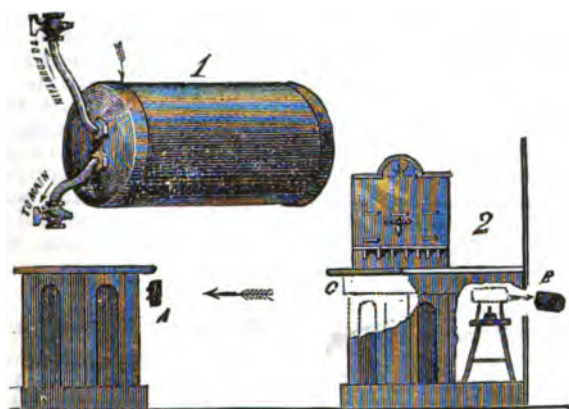
Apparatus for the Estimation of Ammonia.

STEAM VACUUM PUMP FOR DISTILLATIONS IN VACUO.

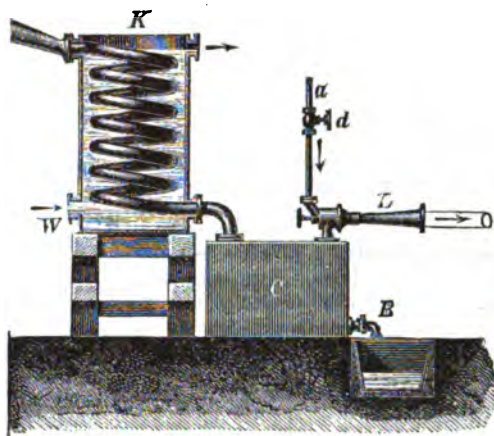
THE principle of the filter pump has been explained so often (see our last November number, p. 214) that it may be assumed to be familiar to all our readers. The same principle and construction has long been employed in the construction of pumps, where the vacuum (or pressure) is obtained by a current of steam.

The application of such a steam vacuum pump to distillation under diminished pressure is illustrated in the accompanying cut. The still and condenser are of the ordinary construction. The receiver C, however, is a closed vessel, into which the pipe from the condenser fits air-tight. Upon another orifice, on top, a steam vacuum pump is attached, the current of steam passing down the pipe A, and issuing at L through an expanded pipe. The rapid jet of steam aspirates all the air from the receiver C, and, in consequence of this, the liquid in the still will boil at a much lower temperature. By careful regulation of the heat under the still—either open fire or steam—and by proper adjustment of the steam jet, a very low vacuum can be obtained.

In the case of liquids, which, on distillation, produce gaseous products which are not intended to be condensed, these are, of course, carried off along with the air and vapor of water. When volatile liquids heavier than



Explosion of a Hot-Water Fountain Boiler.



Steam Vacuum Pump.

existing in a liquid, or of free and combined ammonia, the liquid or solid is put in the flask with water, and slowly heated, while a current of washed air is at the same time passed through the contents of the flask, best by aspiration at the further end of the receiver. Solution of soda is next introduced, and the distillation continued as described above.]

EXPLOSION OF A HOT-WATER FOUNTAIN BOILER.

A CORRESPONDENT of the *Scientific American* describes an accident which occurred on the 18th of November, in Wilfert's drug store, northeast corner of Fourth and Walnut streets, Cincinnati, Ohio. During the winter, the firm sell "hot soda"; the water is heated in a copper boiler, twelve inches long, seven inches diameter, about one-sixteenth inch thick, the end slapped and soldered on. The only vent the boiler had was at the fountain faucets; it had no safety valve whatever. A little oil lamp was constantly alight under it, to keep it hot, and the pressure could accumulate to any extent. The result was an explosion. The front end was blown off to A, breaking the marble at C (one and one-half inches thick) in two, the main portion passing through a cupboard to B. Several persons were there, but no one was injured; all the plate glass in the store

been discovered under similar circumstances. At first it was thought that the tin ore in the New England district (Australia) was confined to existing shallow streams, and that it was useless to look for it at any considerable distance below the surface. It has since been discovered at various depths, from a few inches to 250 feet. The first deep-stream tin found, at Vegetable Creek, was in 1873. The lead was traced along a distance of four or five hundred yards. At a depth of fifty feet, very heavy deposits were found, under basaltic rocks. Several other leads were afterwards struck at greater depths, running almost parallel with the first. It is now believed that tin ore exists throughout all the old river beds and valleys of the district. Some of the deposits are covered with immense masses of basaltic rocks, which will require a heavy expenditure of capital to remove, but the ore is so rich and abundant that the outlay can very well be afforded. There is reason to believe, however, that many years will elapse before the surface mines are exhausted. During the year 1883, The Vegetable Creek Tin Mining Company obtained 2,000 tons of ore from an area of five acres. The secretary for mines states in his last report that the flow of basalt and other geological formations at New England district indicate that stream tin will last for many years.—*Chem. News.*

water are to be condensed, the exit pipe of the condenser is made long enough to reach within a short distance (about one-half inch) of the bottom, and enough water is poured in to cover the end of the pipe.

If the liquid to be distilled is very light, and no lighter non-volatile liquid can be used as a layer to float on top, the steam jet issuing from the vacuum pump may be made to enter a second, efficient condenser in which both the steam and vapor of the volatile liquid are condensed together.

If the volatile liquid is alcohol, and the first condenser is kept properly cold, the steam vacuum pipe may be used unhesitatingly. Although it will aspirate some of the alcohol as vapor, yet the loss will not be important.

These steam vacuum pumps (steam jet pumps, or injectors) were first perfected by Körting, of Hanover, and may now be obtained everywhere. They may be had in all large cities, of all sizes, and for all purposes to which they can be applied, and are comparatively inexpensive.

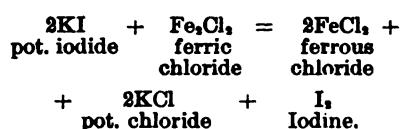
Waterproof Varnish.

Two kilogrammes of melted bitumen are poured into a receptacle heated by a mild fire. Add, while continually agitating, 500 to 600 grammes benzine, 200 to 300 grammes turpentine, and 200 to 300 grammes lamp-black.—*La Nature.*

Volumetric Determination of Iodine and of Iron.

E. FALLIERES recommends the following process for the volumetric estimation of iodide of potassium, or rather, of the iodine contained therein.

0.1 Gm. of the salt is added to any desired quantity (say 30 to 50 Gm.) of a 25% solution of ferric chloride, and the mixture distilled. Iodine will pass over and is to be caught in a receiver containing 5 Gm. of chloroform and 51 C.c. of a solution of hyposulphite of sodium of 0.3 per cent, or such a quantity that all the iodine liberated from the iodide of potassium may enter into combination according to the following reaction:



When the distillation is completed, the excess of hyposulphite is determined by titration with a solution of iodine, containing in 1 liter 7.64 Gm. of iodine and 10 Gm. of iodide of potassium, so that 1 C.c. of it corresponds to 10 milligrammes of pure iodide of potassium.

The author suggests that this process may be used also inversely, for the determination of iron. In this case, it would only be necessary to use an excess of solution of iodide of potassium, and the amount of free iodine distilled over would give, by a simple calculation, the amount of ferric iron that had been present in the mixture.

Hypnone or Acetophenone.

DRS. DUJARDIN-BEAUMETZ and G. BARDET have found that acetophenone is one of the most powerful hypnotics so far known. Dr. Popof, of Warsaw, had previously studied some of the physiological effects of this substance, without, however, discovering its hypnotic action, and found that it is changed, in the body, into carbonic and benzoic acids and is found in the urine in the form of hippuric acid united with bases.

The above-named authors suggest the name of *hypnone* for it, as its chemical name is too long.

The dose, for an adult, is 0.05 to 0.15 Gm. (about 1 to 3 grains), best mixed with a little glycerin and administered in gelatin capsules. It produces a profound sleep, and, in alcoholic cases, the authors deem it superior to chloral or paraldehyde.

During the 15 days that the remedy had been administered to 9 patients—previous to the publication of the report—no symptom of intolerance was noticed. The only drawback is that the breath becomes disagreeable from the fact that some of the substance is exhaled through the lungs.

On injecting the substance subcutaneously into rabbits in doses of 0.5 to 1.0 Gm. (ab. 8 to 16 grains), a remarkable hypnotic condition is induced, which passes into a comatose state and finally ends in death.

The authors state that they are engaged with a series of experiments on bodies belonging to the aromatic series, with a view of studying their physiological properties, and that they will publish the results in a short time.—*Compt. Rend.*, 1885, Nov. 9, p. 960.

NOTE.—Acetophenone or phenyl-methyl ketone, or acetyl-benzol, is formed in various ways, best by distilling a mixture of the benzoates and acetates of calcium, or by the action of zinc methyl on benzoyl chloride. It forms large crystalline laminae, melting at 14° C. (57.2° F.), has a spec. gr. of 1.032 at 15° C., and is converted by oxidizing agents into carbonic and benzoic acids.

The Assay of Tea and Extraction of Theine (Caffeine).

PROF. HILGER recommends the following method for determining the amount of theine (or caffeine) in tea.

Ten to twenty Gm. of tea are completely extracted by boiling with three separate quantities of water. The filtered extracts are mixed with solution of subacetate of lead in slight excess, the resulting precipitate collected on a filter, and washed with boiling water, and the united liquid and washings deprived of lead by hydrosulphuric acid. The liquid separated from the precipitate is mixed with some washed sand and magnesia or lime, evaporated to dryness, and the dry residue completely extracted with chloroform, best in a Soxhlet apparatus [or other form of continuous extraction apparatus]. The residue left after the evaporation of the chloroform appears but little colored, if care has been taken in the process. This residue may be weighed after drying at 100° C. for three hours, and may be obtained completely colorless by recrystallization from alcohol or boiling water.—*Arch. Pharm.*, 1885, 23, 827.

Theine vs. Caffeine.

DR. THOMAS J. MAYS, of Philadelphia, recently published a paper in the *Medical News* (1885, 652), which is calculated to raise some doubts, particularly among physicians, as to the supposed identity of theine and caffeine.

Dr. Mays himself introduced his paper by the statement that theine "is generally reputed to be identical with caffeine, both in chemical composition and in physiological action." He also thinks that he has, by a series of experiments (*Therap. Gaz.*, Sept., 1885), produced sufficient proof to show that theine "differs very markedly in its physiological action from that of caffeine; and he believes to have, since then, gathered evidence to indicate that it differs as widely from the clinical action of caffeine as it does from its physiological action. In fact, caffeine principally affects the motor nerves, while theine chiefly affects the sensory nerves, and clinically proves itself a most valuable analgesic, surpassing morphia in promptness and permanency in relieving pain in some affections, without producing any, or at least very little disturbance of the general nervous system."

Dr. Mays tried subcutaneous injections of theine, and found it to powerfully affect the sensory nerves, acting as an anæsthetic in that portion of an injected limb which is confined below the seat of the injection. "Accordingly, its influence extends from the centre to the periphery, and not in the opposite direction."

Now this difference in action between caffeine and theine, as observed by Dr. Mays, is antagonistic to the assumption that caffeine and theine are absolutely identical. It will be of interest now to ascertain the following points, the study of which we recommend to some of our readers:

1. Were Dr. Mays' experiments made with authentic theine extracted from tea-leaves?
2. Was this theine free from any other principle or contamination?
3. Do all manufacturers of such chemicals make their caffeine solely from coffee, and their theine solely from tea-leaves; or are there any—which is not at all improbable—who, relying on the statement of their being identical, merely put up the same product under different labels to satisfy customers who insist upon having the one or the other exclusively?
4. If the theine employed was genuine, and if it is identical with caffeine, is there some principle accompanying the theine which may be extracted along with it, and modify its action?

Safrol and Oil of Sassafras.

MESSRS. SCHIMMEL & Co., of Leipzig, announce that, during the last few years, it has become a matter of great difficulty to obtain oil of sassafras of uniform quality, or even pure oil; in fact, they state that they have often been compelled to reject adulterated oil of sassafras coming direct from the place of production. After many endeavors to overcome this evil, they have concluded to put upon the market the pure stearoptene of oil of sassafras, known as *safrol*. The physical properties of this are so pronounced that any inferiority or adulteration can be detected by mere comparison. *Safrol* is the real aromatic principle of the oil. The commercial oil always has more or less color, and its spec. grav. varies from 1.020 to 1.080, the lower figure indicating possible adulterations with cheaper oils, such as turpentine, Japanese camphor, etc. Schimmel & Co.'s pure safrol is water-white, boils at 232° C. (449.6° F.), and congeals at a moderately cool temperature; its spec. grav. is 1.108.

NOTE BY ED. AM. DRUGG.—The circular omits to state at what temperature the spec. grav. of safrol is 1.108. We presume it is meant to be at the ordinary temperature, say about 65° F. We have no specimen of the article at hand, hence we cannot verify our guess.

According to Procter, oil of sassafras has a spec. gr. of 1.087 to 1.094. On rectifying it, a small quantity of a hydrocarbon, *safran*, passes over at 156° C. (312.8° F.). The remainder, when cooled, separates large, hard columnar crystals of safrol, and the dark-colored mother-liquid, when further cooled, will separate another lot of crystals. Safrol (C₁₀H₁₀O₂) melts at 8.5° C. (47°–48° F.), forming a liquid having the spec. gr. 1.114 at 0° C. (32° F.), which is capable of retaining its fluid condition even far below this temperature. Rapid crystallization is induced by the introduction of a crystal of safrol.

Sublimate Dressings.

DR. GEISSLER draws attention to the fact that fabrics (gauze, etc.) impregnated with sublimate should not be kept long, on account of the volatility of the sublimate and its readiness to decompose. In two samples of 0.5% sublimated wood-wool, only 0.315% was found, and in a 0.5% sublimated gauze, only 0.33% of sublimate and 0.05% of calomel.

The sublimate is easily extracted by ether or alcohol, and therefore easily determined. More difficult is the determination of the calomel. To do this, the fabrics must first be deprived of sublimate, then treated with hydrochloric acid and chlorate of potassium. The mercury may then be precipitated, in the resulting solution, by hydrosulphuric acid.—*Pharm. Centralbl.*

Characteristic Color Reaction of Physostigmine.

THE Pharmacopœia Committee of the German Pharmaceutical Association proposes to enlarge the description of salicylate of physostigmine by adding the following characteristic color test:

"The smallest fragment of the salt dissolves in warm water of ammonia to a yellowish-red liquid which, when evaporated on a water-bath, leaves a blue or brownish-green residue, soluble in alcohol with a blue color. This solution, when supersaturated with acetic acid, turns red and fluorescent. The above residue, when dissolved in a drop of sulphuric acid, colors the latter green; on diluting with alcohol, the color changes to red, and returns to green when the alcohol evaporates."—*Pharm. Centralbl.*

Bibromide of Mercury.

(Mercuric Bromide.)

EUGEN DIETRICH gives, in the *Pharm. Centralhal.*, No 46, the following directions for preparing this salt:

Mercury 100 parts.
Bromine 85 "
Distilled water q. s.

Into a glass-stoppered bottle introduce the mercury, bromine, and 200 parts of the water, and shake until the metal has become changed into a whitish powder. Transfer the contents to a flask, rinse the bottle with 800 parts of the water, boil four or five minutes, then, if there should be anything undissolved, allow to settle, and filter through glass-wool. Treat the residue that may have remained in the flask with 500 parts of water and filter. Evaporate the united filtrates at 40° C. (104° F.), until a pellicle forms on the surface, then set aside to crystallize. Concentrate the mother liquors, and continue the process as long as crystals can be obtained.

Dry the crystals in a dark place at a temperature not exceeding 25° C. (77° F.), and preserve them in bottles of brown or black glass.

The excess of bromine is necessary, because some of the latter is soluble in water, and the solution of bromine thus produced is too dilute to act on the mercury. For this reason, also, only a small quantity of water must be employed at first, and more should not be added until the bromine has combined with the mercury.

Beside the bibromide, a small amount of mercurous bromide (protobromide of mercury) is formed, a little of the metal also remains unattacked. The two substances form the insoluble residue.

The yield is about 150 parts.

The salt may also be prepared by decomposing mercuric nitrate with bromide of potassium, but the above-given method is preferable, because more simple.

Protobromide of Mercury.

(Mercurous Bromide.)

Mercurous nitrate 100 parts.
Nitric acid 15 "
Bromide of potassium 48 "
Distilled water q. s.

Triturate the mercurous nitrate in a mortar or capsule with the nitric acid, gradually add 500 parts of the water, and effect solution, if necessary, by gently warming. Also prepare a solution of the bromide of potassium in 500 parts of the water. Pour both solutions, together, in a thin stream, and under agitation, into a capacious vessel containing 100 parts of the water. Allow the precipitate to subside, draw off the supernatant liquid with a siphon, then wash by decantation until blue litmus paper ceases to be turned red. Collect the precipitate upon a filter, and dry in a dark place, at a temperature of 30° to 35° (86°-95° F.). [The whole process should be carried out with artificial light.]

The yield is about 95 parts.

The product should be preserved in bottles of brown or black glass.—EUGEN DIETRICH in *Pharm. Centralhalle*, No. 46.

Lantanine, a New Alkaloid.

DR. BUISA, of Lima, had been using as an antipyretic a tincture of *Sagrada*, family *Verbenaceae*, species *Lantana Brasiliensis*. Efforts made, at his instance, by Dr. Negrata to cover the extreme bitterness of the drug led to the finding of its active principle, which is announced in *El Cambo Farmaceutico* as the new alkaloid, lantanine. It is said to moderate the circulation, retard nutritive changes, and

lower the temperature. Fifteen to twenty grains per day, in pills of one and one-half grain each, have been used to reduce temperature, and thirty-grain doses are said to conquer intermittents that prove rebellious to quinine. It seems not to disturb even the most sensitive stomach.—After *Therapeutic Gazette*.

Bismuth Subnitrate for Epididymitis.

DR. J. A. COMINGOR in a letter to the *Medical Record*, referring to a similar report regarding fuller's-earth, states that under the outward application of subnitrate of bismuth, the pain of acute epididymitis is speedily relieved, and tenderness and swelling subside in a short time. He directs it to be used as follows, to wit: Bismuth in indefinite quantity, water sufficient to make a paste about the consistence of thick cream, and with a large camel's-hair brush paint the scrotum two or three coatings, and repaint at intervals several times daily. To make the directions more definite, take bismuth and water in equal parts, mix, and apply as above. For the purpose of taking the weight off the cord and blood-vessels, I order some sort of scrotal suspension. If the ailment is severe enough to bed the patient, a broad strip of adhesive plaster or bandage fastened across or around the thighs, with sufficient padding under the scrotum and contents to elevate above the level of the body, to favor the return of blood, will be found serviceable.—*Therapeutic Gazette*.

Determination of Glucose and of Milk-Sugar in Mixtures.

THE derermination of milk-sugar alone, as pointed out by Muter and Soxhlet, varies greatly in the results obtained by different experimenters, unless an invariable method with tedious precautions is followed. But when there is a mixture of milk-sugar with cane-sugar, the difficulties are such that usually only the milk-sugar is estimated, and the cane-sugar taken by difference.

Messrs. A. W. Stokes and R. Bodmer have introduced a volumetric method whereby such mixtures can be rapidly and accurately determined (*Analyst*, April, 1885). This method is especially useful in the estimation of cane-sugar added to milk, e. g., condensed milk. They employ Pavy's ammoniated Fehling's solution, prepared thus:

Cupric Sulphate Crystallized.. 34.65 Gm.
Rochelle Salt 170. "
Potash 170. "
Made up to a liter.

Of this 120 Cc. are added to 400 Cc. of ammonia (sp. gr. 0.880), and made up to a liter.

10 Cc. of this solution = 0.005 Gm. of glucose.

The milk, or other solution, largely diluted, is placed in a burette, to the point of which hangs, by a small piece of india-rubber tube, a flask of about 100 Cc. capacity. The india-rubber tube is compressed by a screw clip. A side tube allows the escape of the ammonia gas evolved. Into the flask 40 Cc. of the standard solution are placed, this is boiled, and the sugar solution run in till the blue color disappears. It being exceedingly easy to run in too much, 0.2 Cc. less than the quantity found is placed in another flask with 40 Cc. of the blue fluid, and the whole boiled. If the blue color does not go, the former titration was correct within 0.1 Cc. Another portion of the same diluted milk is boiled for ten minutes with two per cent of citric acid. This inverts completely the cane sugar, but does not touch the milk-sugar, even if the boiling be continued for thirty minutes. The liquid is

cooled, neutralized with ammonia, and titrated as in the first instance.

Two readings of the burette are thus obtained: the first due to the action of the milk-sugar, the second due to the combined action of milk-sugar and glucose.

The authors found that milk-sugar has 52 per cent of the reducing power of glucose on this blue liquid.

So that by a short calculation, or by reference to a table given in the paper, the proportions of milk-sugar and cane-sugar present are easily found. Examples are given, showing the methods of calculation and the results obtained. The milk or sugar solution should be diluted, so that from 6 to 12 Cc. are needed to decolorize 40 Cc. of the blue liquid. The advantages claimed for the process are the rapidity, ease of working, and accuracy of results that can be obtained by any ordinary operators.

The fluid used will keep of standard strength indefinitely, the end point of the reaction is sharply marked, not being obscured by the usual dirty-red precipitate; it is essential that it should remain clear the whole of the time.—*Chem. News*.

Non-Acid Shoe-Blacking.—Mix thoroughly $\frac{1}{2}$ pound lamp-black and $\frac{1}{4}$ pound bone-black with 5 pounds glycerin and 5 pounds syrup. Heat moderately 3 ounces of gutta-percha, in an iron or copper vessel, until it is quite fluid. To this add 11 ounces olive oil, and after solution is complete a little over 1 ounce of stearin. This solution, while still warm, is added to the first mixture, after which $\frac{5}{8}$ ounces gum senegal and $\frac{1}{4}$ pounds of water are added. The whole is perfumed with about half an ounce oil of rosemary, or oil of lavender. For use this blacking is mixed with $\frac{1}{2}$ part water. It is said to give a nice polish.

Herr Artus recommends the following formula as less destructive to leather than most blacking in use: Mix thoroughly $\frac{3}{4}$ pounds vegetable-black, $\frac{1}{4}$ pounds ivory-black, 5 pounds each of molasses and glycerin; cut 6 ounces of gutta-percha into small pieces, melt, and when fluid add 20 ounces olive oil and afterward 2 ounces of stearin; stir, while hot, the second mixture into the first, and then a further addition of 10 ounces gum senegal dissolved in 3 quarts of water is made. This may be kept as stock, and for use diluted with about three times its bulk of warm water.

For liquid blacking without sulphuric acid, mix 1 pound finely powdered ivory-black, $\frac{1}{4}$ pound molasses, 2 ounces sweet oil, and 1 pint each of beer and vinegar; mix the first three ingredients very thoroughly together before adding the last two. A better liquid blacking may probably be made by the following formula: Mix 1 pound each of ivory-black and molasses, and $\frac{1}{4}$ pound sweet-oil, and gradually add $\frac{1}{4}$ pound sulphuric acid diluted with three times its weight of water; mix well, and set aside for three hours. Reduce to proper consistency with water.

For Poison Oak Eruption.

DR. W. H. TATE, in *Peoria Med. Monthly*, for the skin trouble so frequently caused by *Rhus toxicodendron*, recommends highly:

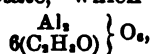
R Cupri sulphat 3 ij.
Aque O. ss.
Solve.

Sig. Apply to the surface with sponge or soft linen three times a day.—*Med. and Surg. Reporter*.

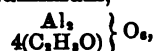
Hertzog's Swiss Pills.—During the trial of certain French dealers who had counterfeited various mineral waters and the above-named pills, it leaked out that these pills are simply the compound colocynth pill of the French codex.

Acetate of Aluminium.

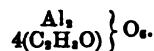
DR. ROSE, of New York, gave an interesting résumé of the chemistry and therapeutic uses of this salt. The normal acetate, which would be



does not seem to exist. A concentrated solution of sulphate of aluminium, filtered with excess of acetate of lead, and then freed from lead and sulphur, gives by evaporation, without elevating the temperature, an insoluble acetate of aluminium,

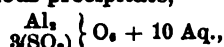


in the form of plate-like scales. From the warm solution there is thrown down a powder, which consists of two mol. of water and



and which, digested with 2 mol. of acetate of aluminium and 200 parts of water, gives a soluble salt, free acetic acid, and the hydrate of alumina. A solution of acetate of aluminium, evaporated rapidly at a low temperature, separates into the acetate of aluminium, 2 mol. of acetic acid, and 4 mol. of water. The former, again digested, throws down the hydrate, and has now lost its mordant properties, and can no longer be used in the arts. The hydrate of alumina, dried at a temperature of 100°, and containing 2 mol. of water, is soluble in acetic acid, insoluble in strong acids.

A solution of the acetate warmed with the sulphate of potassium at a temperature of only 30° throws down a gelatinous precipitate,



which is soluble in cold acetic acid. When dried it is hard, semi-transparent, and easily pulverized. A solution of the acetate and chloride of sodium mixed gives a fine precipitate, composed as follows:

	Per cent.
Al_2O_3	44.56
$\text{C}_2\text{H}_3\text{O}_2$	21.96
HCl	5.51
H_2O	25.90
NaCl	1.97

Dr. Burow's method of preparing the salt is given, as follows: First, dissolve 10 parts of sulphate of aluminium in the least possible quantity of hot water, then 17 parts of crystallized acetate of lead in the same manner, and mix the two solutions while hot; stir well, set aside for a while, and then filter, washing the precipitate, consisting of sulphate of lead, with a little warm water. The clear fluid is now saturated with sulphuretted hydrogen until the odor of the latter is clearly perceptible; then separate with the filter the resulting sulphide of lead, warm until the sulphuretted hydrogen has disappeared, filter again, and dilute the filtrate with sufficient water to make the whole measure 48 parts. We have then in an ounce of the solution a drachm of dehydrated acetate of aluminium.

This solution is a clear fluid of a specific gravity of 1.0392, of a sharp, sweetish, astringent taste, and with a distinct odor of acetic acid. Evaporated in the open air, it deposits upon glass or porcelain light, fragile, glassy scales, which are perfectly soluble in water, and not readily affected by the atmosphere. In external application it is of less importance to have a chemically pure preparation of the salt than one of definite constitution, and whose degree of concentration can be regulated at will. Since the presence of the potassium salt is immaterial, solutions of the acetate of aluminium for external use may be prepared from common alum and acetate of lead, 1.6 parts of the latter reducing

1 part of the former; 55 of alum and 31 of acetate of lead are dissolved in cold water, and this process gives an almost complete decomposition of the sulphate of aluminium in a nearly concentrated solution. Burow first employed the acetate of aluminium in cases in which he wished to destroy disagreeable odors—cases of extensive sloughing and suppuration. Then, after witnessing its beneficial effects on the process of granulation in ulcers of the leg, he tried it for a long time in all cases of the latter character, for the purpose of determining in which it was most useful, and in which it might be contra-indicated. As to the different forms of ulcers in general, he found that it is particularly the sloughing condition which by a methodical application undergoes the most pronounced change in the shortest time; in such cases the entire suppurating surface must be at first constantly under power to attract and destroy the odors which are developed during this process, and the really miraculous manner in which it regulates perverse secretions in the living organism, are peculiarities which are found in no other drug, and for which in the present state of our knowledge we are at a loss to account.

When Burow made his report to the Medical Society of Königsberg he exhibited two cadavers (children), into which he had injected a concentrated solution of acetate of aluminium six weeks before; they showed no evidences of putrefaction, and he recommends this mode of embalming.

It was not until the year 1874, when the germ theory was established, that Burow found the explanation which he had so long been seeking; and it was Dr. Beneke, of Königsberg, who demonstrated to him the relation of the acetate of aluminium to bacteria and vibrios, and thereby the significance of the remedy as an antiseptic.

Beneke showed that when a drop of the alumina solution was brought in contact with the above organisms, which under the microscope were seen to be in lively action, they were destroyed immediately, with the quickness of lightning. Dr. Rose has successfully used the acetate in cases of gangrenous and complicated wounds, and he recommends it as an antiseptic much preferable to carbolic acid for post-partum injections. For external use a three-per-cent solution is the strongest which is required, as given by the following formula of V. Bruns, of Tübingen:

B. Aluminis	72 part.
Plumbi Acet.	115 "
Aque.	1,000 "
M. et filtra.	

For irrigation purposes, this three-per-cent solution may be diluted by from three to six volumes of water, giving a 1-per-cent to a 0.5 solution. The properly prepared acetate is high-priced, and it is hoped that some of our chemists may find a cheaper mode for its manufacture.—*Therapeutic Gazette*.

Paraffined Rubber.

To prevent rubber articles from becoming brittle and hard, and render them at the same time more durable and air-tight, it is recommended by Kreusler and Budde to immerse the articles in a paraffin-bath heated to 100° C. (212° F.) for a short time; small articles for a few seconds, and larger ones for a few minutes. They should afterwards be placed into a room where the temperature is about 100° C., whereby the paraffin is made to penetrate the rubber uniformly. After a few hours a sufficient quantity of the paraffin, from 2 to 8 per cent, has been absorbed.

To merely preserve rubber articles while in stock for sale, it is sufficient

to dip them momentarily in melted paraffin. This coating may be subsequently removed by thoroughly rubbing the articles previously warmed.—*Neueste Erfind. und Erfahr.*

A Simple Desiccator.

MR. YVON describes a simple form of desiccator, devised by Wiesnegg, which is particularly serviceable for drying small quantities of precipitates, and particularly those of uric acid and albumen. It is readily intelligible without illustration. It simply consists of a rectangular plate of copper, platinized or nickel-plated, about $\frac{1}{4}$ inch in thickness, with a groove along one of the sides in which the thermometer is placed, graduated from 60° to 100° C. (140° to 212° F.). The groove is filled with copper filings so that the thermometer may be in better contact with heated metal. The plate is heated like a sand-bath, or better, on a sand-bath, the heat being regulated either by adjusting the gas stop-cock or some other contrivance, and may be maintained at a uniform temperature without difficulty. The washed filter is first dried upon it and weighed; then the precipitate is transferred to it and washed and the filter, which may be still moist, laid upon the plate, when it will dry rapidly. The thoroughness with which the washing has been conducted may be recognized from the absence of any stain on the plate, when the filter is removed.—*Journ. de Pharm. et Chem.*

To Prevent Store Windows from Frosting.

EDUARD GRUBE, of Hamburg, has patented a method for preventing store windows from frosting. He directs to run a small tin or other metallic tube along the lower edge of the window, or several sections of it, and to cause a current of hot air, produced by a gas-burner or any other source of heat, to traverse the tube. The gentle radiation of heat from its surface causes an upward current of warmer air along the panes of glass and prevents the formation of frost.

How to make the best "Tea."

IN the course of a paper (published in the *Chem. News*, 1885, 229) on the chemical composition of certain varieties of tea-leaves, Mrs. Wilhelmina M. Green brings forward the results of her experiments on the conditions necessary to extract the most aroma from tea-leaves, while at the same time leaving most of the objectionable constituents behind. From these results it appears that the most wholesome and best tasting "tea" is produced by pouring boiling water on the leaves, allowing to stand during 7 or 8 minutes, and then pouring the infusion off. This contains now the aromatic oil, almost all the theine, more than one-half of the inorganic constituents, and about one-third of the astringent and bitter tannic acid. The whole of the water must be added at once. Accordingly, the usual custom of allowing the tea to "draw" is objectionable.

To Render Fabrics Impervious.

IN 8 liters of water heated to about 80°, melt 300 grammes of gelatin, and 600 grammes of castor-oil soap, then add 300 grammes of gum-lac, stirring the liquid until entirely dissolved.

Withdraw from the fire, and add to the mixture, little by little, 600 grammes of powdered alum, stirring all the while. The liquid thickens in forming an insoluble alum soap which is intimately incorporated with the gelatin and the gum-lac. Spread it over the stuffs with a bristle-brush.

Estimation of Water in Viscid Substances, such as Honey, Glucose, Extract of Beef, etc.

THE methods generally employed for the estimation of water in viscous liquids are so well known that it will not be necessary to describe them. Evaporation in flat dishes, with or without stirring and drying with gypsum or sand, are the processes most frequently employed.

Any one who has practised these methods need not be told how troublesome and unsatisfactory the results are. Variations in the percentages of moisture obtained are always expected and are frequently of considerable magnitude.

In the following experiments we have tried to develop a method which will give concordant and therefore comparable results.

The success of the experiment was largely due to the new system of evaporation afforded by the steam drying oven described below.

This box contained three horizontal layers 1½ inch copper tubing, placed at a vertical distance of 20 Cm. between them. This system of steam pipes was inclosed in a box made of soapstone. Any non-conducting material may be used for this box. Each layer of pipes is connected with the steam service and with a trap. By this arrangement all or any one of the sets of tubes can be furnished with steam. The steam is admitted by an automatic valve by which the pressure of the steam in the tubes of the box is constant, no matter what the pressure in the boiler may be.

The top of the box is arranged like the roof of a house, and carries a ventilating flue with a damper.

The box rests on leaden supports in a lead box, over the bottom of which is placed a layer of pumice-stone saturated with sulphuric acid. All the air which enters the box must pass over this desiccating material. It therefore reaches the substances to be dried in the most favorable conditions. Each layer of tubes is provided with a thermometer. The trap is set so that no water will accumulate in the pipes, and at the same time as little steam escape as possible.

Experience has shown that with 20 lbs. pressure of steam the middle system of tubes will give a constant temperature of 100°. The bottom and top floor are a little cooler.

With 40 lbs. pressure, the central floor will show a temperature of 107° when the damper is closed. The dishes containing the substances to be dried are carried in trays made of wire gauze. A box of the size described will hold more than a hundred three-inch dishes.

Outlines of Method.—About 2 Gm. of the substance are taken and dissolved in alcohol. The alcohol should be about 80 per cent strength, so that about 5 C.c. of it will dissolve the samples taken. If the sample contains much dextrin, a weaker alcohol may be used. The platinum dish and short glass stirring rod are weighed together. Fine sifted sand, previously gently ignited, washed with distilled water and dried at 100°, is now poured into the dish from a weighing tube. About 15 Gm. are enough. The alcoholic solution of the sample is at once taken up by capillary attraction. The sample is then dried in the oven for half an hour to one hour. It is then removed, and when cooled to about 70°, 5 C.c. absolute alcohol are added, and thoroughly mixed with the contents of the dish by the stirring rod.

The sample is allowed to stand for a few minutes until the absolute alcohol has had opportunity to penetrate to all parts of the saccharated sand. The dish is then warmed at 70° to 75° for a few moments, until nearly all the alcohol is

driven off. It is then placed in the oven and dried to constant weight.

[In the title we have added the words "extract of beef," since we have used a method closely resembling the above for a long time for this purpose with great advantage.—ED. AM. DR.]
—H. W. WILEY and F. V. BROADBENT in *Chem. News*.

Prices of Metals.

THE *Metallarbeiter* remarks that metals have in most cases experienced a reduction in value of late years, this depreciation being attributed in some measure to the cheaper methods of obtaining metals, as well as to the discovery of new sources of mineral wealth.

The following comparative table shows the approximate prices of various metals in December, 1874, and December, 1884:

	Dec., 1874. per lb.			Dec., 1884. per lb.		
	£	s	d	£	s	d
Osmium.....	71	10	0	62	0	0
Iridium.....	70	0	0	45	0	0
Gold.....	62	15	0	63	0	0
Platinum.....	25	7	6	21	7	6
Thallium.....	23	17	6	4	15	0
Magnesium.....	10	5	0	1	15	0
Potassium.....	5	0	0	4	0	0
Silver.....	3	17	6*	3	7	8
Aluminum.....	1	16	0	1	16	0
Cobalt.....	1	14	0	1	2	0
Sodium.....	0	14	2	0	8	8
Nickel.....	0	11	0	0	8	1
Bismuth.....	0	8	1	0	8	1
Cadmium.....	0	7	1	0	4	0
Quicksilver.....	0	2	0†	0	1	9
Tin.....	0	1	1‡	0	0	9
Copper.....	0	0	10‡	0	0	7
Arsenic.....	0	0	8	0	0	4‡
Antimony.....	0	0	6‡	0	0	5
Lead.....	0	0	2‡	0	0	1‡
Zinc.....	0	0	2‡	0	0	1‡
Steel.....	0	0	1‡§	0	0	0‡
Bar Iron.....	0	0	1‡§	0	0	0‡
Pig Iron.....	0	0	0, 7, 8	0	0	0‡

* In Hamburg.
† In London.

‡ In Berlin.
§ In Upper Silesia.

Gold now ranks highest in value of all metals, the competition of osmium and iridium having been overcome. It is only by reason of improved methods of preparation that the latter have become cheaper, while their use has at the same time increased. Iridium is mixed with platinum in order to increase its strength and durability. The normal standards of the metrical system are made of platinum-iridium on account of its known immutability. January, 1882, platinum stood 15 per cent below its present value; but its increased employment for industrial purposes led to the subsequent improvement in price. Thallium has experienced a severe depreciation on account of the economical process by which it is extracted from the residue of the lead chambers used in the manufacture of sulphuric acid. The use of this metal is mainly confined to experimental purposes. The fall in silver has arisen from increased production and diminished use for coinage.

Magnesium was scarcely of any industrial value prior to the fall in price now recorded. Improved processes for its treatment have successfully engaged the attention of scientific men, and it is now capable of being used as an alloy with other metals. The Salindres factory regulates the price to a certain extent, and its system of working is regarded as a guide in the various processes connected with this branch of industry. The manufacture of potassium and sodium will, it is expected, be more fully elucidated than hitherto, by means of researches made at Schering's Charlottenburg factory. The course of nickel prices illustrates the stimulus to economical production afforded by an increased consumption. This latter fact is principally due to the employment of nickel for coinage, as

alloy for alfenide, etc. The use of cadmium is materially restricted by its relatively limited supply. Hitherto, its only source was in the incidental products of zinc distillation, but of late date it has been attempted to bring it into solution from its oxide combinations. An increased employment of cadmium for industrial purposes is expected to follow.

Production in excess of the demand has caused the depreciation recorded in tin and various other metals not commented upon, this remark applying even to the scarce metals, arsenic and antimony. Even the better marks of Cornwall tin and Mansfield refined copper have had to follow the downward course of the market.

Mrs. Allen's Hair Restorer.—Wittstein and Masset have separately analyzed "Mrs. Allen's world-renowned hair restorer," and find it to consist of flowers of sulphur, acetate of lead, glycerin, and water, with a little cinnamon, to give the mixture a pleasant odor. The two analyses agree quite closely, as shown by the following comparison: Masset found in 993 parts of the "restorer," of precipitated sulphur, 17 parts; acetate of lead, 26½ parts; glycerin, 320 parts; and water, 630 parts. Wittstein, in 940 parts, found of precipitated sulphur, 16.8 parts, acetate of lead, 24 parts; glycerin, 300 parts; and aromatic water, 60 parts. These analyses show the dangerous nature of the mixture, containing as it does over 2½ per cent of acetate of lead.

Duration of Woods.

SOME French experiments made with little cubes of several kinds of wood, which have been sunk down into 25 millimeters of earth, show that the birch and the aspen have rotted in three years; the willow and the chestnut in four years; the maple and the beech in five years; the elm, the ash, the yoke-elm, and the Italian poplar, in seven years. The oak and several kinds of pines have rotted in seven years at a depth of 12 millimeters. At the end of seven years, the larch was still intact.—*La Nature*.

[Ure's Dictionary says: "It is found that woods of slow formation are far more durable than such as grow rapidly. The woody fibre itself is but little affected by the action of air or water, but the albumen and other bodies existing in the sap are very liable to decompose. Therefore the heartwood of trees, as being the most dense, is less liable to change or to be attacked by insects than other parts. Young, sappy wood is liable to a rapid change, and is exceedingly attractive to insects. As a rule, it appears that those woods are the most durable which have been grown under a full exposure to sunshine and with free influence of air."—ED. AMER. DRUGG.]

How to Loosen a Rusty Screw.

To loosen a rusty screw, heat the head of the screw. Get a little bar of iron red-hot in the fire, flatten its end, and apply it for two or three minutes to the head of the rusty screw. As soon as the screw is hot, it can be drawn out with a screw-driver as easily as it was put into its place.

A Coating for Iron and Steel.

ACCORDING to the *Moniteur Industriel*, to obtain a coating for iron and steel which will perfectly protect them from oxidizing, cover the articles with a hot solution of sulphur in turpentine. The sulphur, after the evaporation of the oil, remains as a thin layer on the surface. It is joined intimately to the metal under the action of an alcohol flame. It thus forms a beautiful black varnish, which is very solid.

Method of Using Gelatino-Bromide Plates in Photography, which Have been Already Exposed.

HERE is a method of using gelatino-bromide plates again after having been already exposed to light. The process was published in 1882 by *la Revue des Sciences et de l'Industrie*, and more latterly by the *Moniteur de la Photographie*.

When operating, perhaps far away from the laboratory, it is often prudent to expose several plates to the same subject in order to insure success, although the first impression might have been sufficient, the result being found perfect at the time of development.

In such a case it is not needful to develop the other plates of the same subject, and they can be kept for making new impressions.

All the exposed plates which are not developed lose the effect of the impression, and become again sensible by means of an immersion of three minutes in a bath of two per cent of bichromate of potassium. After a good washing, the plates are stood up nearly vertically, one side resting on blotting paper to dry them, without any light.

By this process plates which were supposed to be spoiled during the course of an excursion may be used. On returning, if the first or second proof succeed, the other exposed plates can be put aside to be treated, as we have said, and to be again used.—*La Nature*.

Iodoform Collodion.

DR. WILLIAM BROWNING, of Brooklyn, in the October number of *The American Journal of the Medical Sciences*, gives his experience with this remedy for external application. The strength usually employed is one part of iodoform to fifteen of collodion. A half-ounce is usually sufficient for any ordinary single application. Dr. Browning has found it most effective when painted on in very thick layers, which may be conveniently done with the usual camel's hair brush. As soon as one coating becomes a little firm, another is applied, and so on until it appears to have an average thickness of half a millimeter. In the neuralgic cases a cure, when effected, was usually accomplished with one or two applications. Supraorbital neuralgias, even of malarial origin, particularly if the miasmatic infection dates back some time, seem quite amenable to this treatment. It is not recommended as a substitute for quinine here, but only as an adjuvant where the latter fails, or acts too slowly.—*Therapeutic Gazette*.

Australian Asbestos.

AN asbestos mine exists on the spur of a hill about two miles from Gurdagai, New South Wales, in which the lode has been driven for a distance of ninety feet, and a shaft one hundred feet has been also sunk. The mineral occurs in a serpentine formation similar to quartz veins, and is mined in the same manner. The material is very abundant, and is of as good quality as any in the world. The shareholders have started an asbestos manufactory, in which they propose to work up asbestos for various purposes. Among other useful purposes to which the asbestos is put is the making up of a fire-proof paint. On the same property, another class of asbestos has been discovered, and worked in connection with gold. The lode is peculiar in character, and with one or two minor exceptions is almost identical with the famous Lucknow lode, which has proved so rich in gold. In some instances, veins of calc-spar

make their appearance in the lode, bringing gold with them every time. Arsenical and iron pyrites are abundant, and so far as the lode has been worked, it has proved payable by crushing tests without one failure.—*Chem. News*.

Morrhual.

DR. JOSEPH LAFAGE announces, in the *Bull. de la Thérap.*, that he has been employing a "principle" extracted from cod-liver oil, by a process devised by Mr. Chapoteaut, with good success. The process employed is described in outline, but we cannot believe that the product is entitled to be regarded as a chemical individual, or as the "active principle" of cod-liver oil. If it is obtained in the manner described, it is hard to say what the product really is; if there is any product at all, it is most probably a complex mixture.

The process directs to treat cod-liver oil with a watery solution of carbonate of sodium "which dissolves the acids at a low temperature." Next, the oil is mixed with 90% alcohol, and shaken. The alcoholic layer is separated and distilled, when "the active principles" will be left behind.

This residue, which the author terms *morrhual*, is described as having an acrid bitter taste, very aromatic odor, and crystallizes in part at the ordinary temperature. It is stated to contain phosphorus, iodine, and bromine in very notable proportion, "10 or 12 times greater in quantity than in the original oil. These elements are so combined that they cannot be separately determined."

Brown cod-liver oil is stated to yield 4.5 to 6% of *morrhual*; yellowish oil, 2.5 to 3%; and bleached oil, 1.5 to 2%.

Morrhual is stated to have a disagreeable taste and an aromatic odor, and is best administered in capsules containing 0.20 Gm. (about 3½ grains) of the substance, corresponding to 5 Gm. (75 grains) of cod-liver oil.

We would suggest that some of our readers examine into this subject further, and report.

CORRESPONDENCE.

Cod-Liver Oil Emulsion.

Editor *American Druggist*.

In answer to C. S. (No. 1,611) and Ch. and J. (No. 1,616) about cod-liver oil emulsions, allow me to present the following formulas, which I have had occasion to prepare for several firms in Montreal, and which make good emulsions if prepared rightly.

1st. *Emulsion with Hypophosphite of Lime.*

Calcium Hypophosphite..	3 ij.
Glycerin	fl. 3 xvj.
Simple Syrup	fl. 3 xiv.
Oil Almonds, bitter.....	3 iss.
Oil Neroli.....	℥ xx.
Lime Water.....	3 xxx.

Ten ounces of this solution to a half gallon each of lime water and oil.

2d. *With Hypophosphites of Lime, Soda, and Potassium.*

Sol. No. 1.

Powd. Tragacanth.....	3 ij.
Glycerin.....	fl. 3 ij.
Water.....	fl. 3 vj.

Triturate the tragacanth with the glycerin, then gradually add the water.

Sol. No. 2.

Hypoph. Lime.....	3 iij.
" Soda.....	
" Potash.....	3̄ 3 iss.
Water.....	fl. 3 viij.
Sugar	3 viij.

Dissolve the hypophosphites in the water, add the sugar, and dissolve by

gentle heat. When dissolved gradually add to the first solution.

Sol. No. 3.

Oil Lemon.....	℥ xv.
" Almonds, bitter.....	℥ x.
" Cassia.....	℥ v.
Alcohol.....	fl. 3 iv.

Add to the former two.

Take equal parts of this mixture and of oil. Stir till it does not separate.

3d. *Pancreatized Cod-Liver Oil.*

Sol. No. 1.

Hypophosphite of Lime.....	3 ij.
Glycerin.....	fl. 3 xvj.
Syrup.....	fl. 3 xiv.
Oil Almonds, bitter.....	fl. 3 ij.
Lime Water.....	q.s. fl. 3 xc.

Sol. No. 2.

Pancreatin	3 i.
Glycerin.....	fl. 3 viij.
Syrup.....	fl. 3 xx.
Oil Almonds, bitter.....	3 i.
Tinct. Orange.....	fl. 3 iv.
Lime-Water.....	q.s. fl. 3 xiv.

To each quart of lime-water and oil add 9 oz. of the first solution, and 1 oz. of the second.

The emulsifying qualities of these depend wholly upon the amount of labor spent upon them. I have found a churn a very good emulsion mixer.

E. A. RANSON.

GRAND FORKS, DAK.

Emulsion of Cod-Liver Oil.

IN answer to queries and answers in Nos. 1,612 and 1,616, I can recommend the following as giving an emulsion which is permanent and at the same time as pleasant as those containing sweets and flavors:

I. B Quince Seed.....	3 i.
Boric Acid.....	grs. iv.
Water.....	3 iv.

Let stand until a mucilage is formed, or if wanted for immediate use, pour boiling water over the seed, and shake until mucilage is formed.

II. B Cod-Liver Oil.....	3 viij.
Pv. Gum Acacia.....	3 iv.

Mix well in a suitable mortar, then add at once

Water.....	3 iv.
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Stir until a perfect emulsion is formed, then add the quince mucilage; for castor-oil emulsion, proceed as above, using 2 ounces of powd. gum acacia, in place of 4 ounces.

I find this emulsion is as permanent as any on the market, but has this disadvantage—if hypophosphites are added to it, it has an acrid taste. In comparing it with three popular brands, I mixed 1 part with 3 parts of water, and let stand twenty-four hours, when, upon examination, all showed decidedly greater tendency to separate than this. "JUNIOR."

To Clean the Hands after Work in the Shop.

PETROLEUM jelly serves to clean and take away all traces of dirt from the hands after work in the shop or laboratory. For that purpose, you need only rub the hands with a small amount of the jelly, which, penetrating into the pores of the skin, incorporates itself with the greasy matters which are there. Wash then with warm water and Castile soap, and the hands become cleansed and softened.

Brown's Bronchial Troches are said to be composed of:

B Powd. Ext. Licorice	16 oz.
Powd. Sugar.....	24 "
Powd. Cubebs.....	4 "
Powd. Gum Arabic.....	4 "
Ext. Conium.....	1 "

Use sufficient water.—*Drug. Circ.*

To Cover the Taste of Piperin.—Sweet cream will disguise the taste of piperin, or of powdered capsicum.—*National Drug.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,645.—Perfume for Soap (S. H. C. B.).

Among the more pungent perfumes for soap that might be suitable for the purpose of our correspondent, we may quote the artificial oil of bitter almonds (oil of mirbane), and the new perfume "nerolin," which has an odor resembling that of orange flowers. (See *AMER. DRUGG.*, 1885, 234.)

No. 1,646.—Pain-Killer (O. W.).

According to Stearns' *New Idea*, a preparation closely resembling Perry Davis' Pain-Killer may be prepared from the following ingredients, by maceration:

Myrrh.....	2½ lbs.
Capsicum.....	10 oz.
Opium.....	8 "
Benzoin.....	6 "
Guaiac.....	3 "
Camphor.....	10 "
Alcohol.....	5 gall.

No. 1,647.—Eau de Quinine (Ch. L.).

We do not know the exact composition of the French proprietary article known under this name, but take from our files the following formula of a "Quinine Hair Tonic," which has a clear, red color:

Quinine Sulphate.....	60 grains.
Diluted Hydrochloric Acid.....	q. s.
Glycerin.....	4 fl. oz.
Alcohol.....	2 fl. oz.
Oil of Neroli.....	4 min.
Oil of Bergamot.....	4 min.
Water, enough to make.....	16 fl. oz.
Tincture of Cudbear.....	q. s.

Rub the essential oils with a little precipitated phosphate of calcium or magnesia and about 8 fl. oz. of water, and filter into a bottle containing the glycerin, alcohol, and the quinine previously dissolved in 1 fl. oz. of water with the aid of the diluted hydrochloric acid. Wash the filter with enough water to make the volume of the liquid one pint, and color with the tincture of cudbear (1 in 10, made with diluted alcohol).

No. 1,648.—Cloth-cleaning Liquid (O. W.).

No single liquid will, of course, answer for all purposes, as it depends upon the nature of the stain what liquid should be used to dissolve it. In a general way, we have found that a mixture of water of ammonia (or spirit of ammonia) with an equal volume of benzoin, ether, or chloroform, answers most purposes.

No. 1,649.—Coloring Elixirs (W. McV.).

It is customary to employ as coloring matter either caramel, or cudbear, or cochineal, according to the kind of elixir and the prevailing custom.

About ten minims of caramel will be sufficient to color 1 pint of simple elixir.

Cudbear is best used in form of tincture made with diluted alcohol. It is an excellent coloring agent for acid liquids.

Cochineal coloring may be prepared by mixing

Cochineal, powd.....	1 part.
Alum, powd.....	1 "
Carbonate of Potassium.....	1 "
Bitartrate of Potassium.....	2 parts.

and keeping in well-stopped bottles.

Or, cochineal may be extracted with warm diluted alcohol.

The cochineal coloring is incompatible with acids.

No. 1,650.—Heliotropin (J. D. H.).

This may be obtained from the manufacturers, Messrs. Schimmel & Co., of Leipzig (New York House: Fritzsche Brothers, Barclay st.).

Heliotropin is a trade name given to it on account of its odor, which closely resembles that of the heliotrope. Chemically, it is the substance known as piperonal or methene-protocatechuic aldehyde (see Beilstein, *Handbuch d. organ. Chemie* II., 1662. *Fownes' Chemistry* [Philad. 1878], p. 891).

It is prepared from piperin (extracted from pepper) as follows. The piperin is converted into piperate of potassium by heating it for 24 hours with an equal quantity of caustic potassa and 5 parts of alcohol. It is then dissolved in 40 or 50 parts of hot water, and the hot solution slowly mixed, under constant stirring, with a solution of 2 parts (that is, twice the weight of the piperate of potassium obtained) of permanganate of potassium. The resulting magma is put on a strainer, and repeatedly washed with hot water, until it has no longer the characteristic heliotrope odor. The united liquids are now distilled, and from the first portions of the distillate, which are collected separately, the larger portion of the piperonal (or "heliotropin," $C_{10}H_{10}O_2$) separates, on cooling, in crystals. The remainder may be extracted from the distillate by shaking with ether.

Piperonal or heliotropin is soluble in about 600 parts of cold, and more soluble in hot water; easily soluble in alcohol.

No. 1,651.—Heliotrope Sachet (H.).

We take the following from our files:

Rose Leaves.....	150 grains.
Musk.....	2 "
Tonka Beans.....	75 "
Vanilla.....	40 "
Orris Root.....	300 "

Reduce the ingredients, except the musk, to a moderately coarse powder; then mix intimately with the musk.

This combination, which we have not tried ourselves, is stated to have an odor resembling heliotrope. It seems to us that the odor of the latter may probably be developed more strongly by incorporating with the mixture a small quantity of alcoholic solution of artificial heliotropin. (See answer to query 1,650.)

No. 1,652.—Elixir of Calisaya and Protoxide of Iron (Dr. H. W. and A. T. M.).

The following formula has been recommended for preparing this elixir. It is impossible for us to say whether the firm you mention make it exactly by this formula or not, for we never have had any occasion to handle it, as it is not in demand in our vicinity.

Elixir of Calisaya.....	14½ fl. oz.
Solution of Protoxide of Iron.....	1½ fl. oz.
Mix and filter.	

Solution of Protoxide of Iron

is directed to be prepared in the following manner:

Sulphate of Iron (pure crystals).....	3 troy oz.
Carbonate of Sodium.....	4 "
Citric Acid.....	2 "
Sugar.....	4 "
Hot Water.....	q. s.

Dissolve the sulphate of iron and the carbonate of sodium, separately, in 1 quart of hot water, in bottles just filled with the solution. Cork them and set them aside until merely warm. Then mix them in a bottle large enough to hold the two liquids, allow the precipitate to subside, and fill the bottle with warm water, agitate and decant again. Repeat this until the decanted water is tasteless. (It is not necessary to wash the precipitate until it is chemically pure.) Transfer the precipitate to a

muslin strainer, squeeze out the superfluous water and dissolve the precipitate with the aid of the citric acid in a sufficient quantity of water to make 1 pint.

Elixir of calisaya may be made after a great variety of formulas. That contained in the New York and Brooklyn Formulary will probably be found the best.

No. 1,653.—Copying Ink (Met.).

Any good iron-ink may be converted into a copying ink by evaporating ten volumes of it to about six, and then adding four volumes of glycerin.

The following formulæ are recommended by Fehr:

1. Extract of Logwood.....	35 parts.
Vinegar, diluted (1:1).....	1,000 "
Sulphate of Iron, cryst.....	20 "
Alum.....	10 "
Gum Arabic.....	16 "
Sugar.....	32 "
Glycerin.....	2 "

Heat the extract of logwood with the diluted vinegar until solution has been effected. Then allow to cool, and add the other ingredients.

2. Galls, ground.....	3 lbs.
Logwood, ground.....	3 "
Sulphate of Iron, cryst.....	1 lb.
Gum Arabic.....	½ "
Vinegar.....	1 gall.
Water.....	2½ gals.
Sugar.....	q. s.
Glycerin.....	q. s.

Macerate the solids with the vinegar and water for at least four weeks, stirring and agitating the same several times daily. Then draw off the ink from the insoluble matters, and add to each gallon:

Sugar.....	4 oz.
Glycerin.....	4 "

No. 1,654.—Cod-Liver Oil Emulsion (M. McK.).

You will find some practical remarks on this subject in our last number. In addition, we will give the formulas as recommended in the New York and Brooklyn Formulary:

Stronger Emulsion of Cod-Liver Oil.

(Modified according to Mr. Theodore Louis' suggestions. See *AMER. DRUGG.*, 1884, 130.)

Acacia, in fine powder.....	2 av. oz.
Sugar, in fine powder.....	4 av. oz.
Cod-Liver Oil.....	16 fl. oz.
Water, enough to make.....	28 fl. oz.

Mix 2 oz. of the acacia thoroughly with 4 fl. oz. of the cod-liver oil in a dry mortar, and add 3 fl. oz. of water, with which prepare a perfect emulsion by assiduous trituration. Now add the powdered sugar, and gradually, under constant trituration, alternate portions of the remaining cod-liver oil (12 fl. oz.), and water (5 fl. oz.), in quantities of about 1 or 2 oz. at a time.

The product measures 28 fl. oz., and is to be made up, either with water or with an aqueous solution of certain salts, to 32 fl. oz., when it is prescribed or wanted for use.

Emulsion of Cod-Liver Oil.

Stronger Emulsion of Cod-Liver Oil.....	14 fl. oz.
Oil of Sassafras.....	15 min.
Oil of Wintergreen.....	15 "
Water enough to make.....	16 fl. oz.

Mix thoroughly.

No. 1,655.—German Silver (B. B.).

This is an alloy consisting of copper, zinc, and nickel, in various proportions. The smaller the quantity of nickel, the more yellow is the alloy. The metals are heated together, in small pieces, in a crucible, the copper being so distributed that a little of it is at the bottom as well as at the top. The whole mixture is covered with coal-dust and then exposed to the heat of a furnace, being occasionally stirred with an iron rod. The presence of 2

to 3 per cent of iron in the finished alloy renders it much whiter, but also more brittle. Its spec. gr. varies from 8.4 to 8.7, according to its composition.

No. 1,656.—**Essence of Lemon** (water-soluble), and **Essence of Peppermint** (J. P.).

The same difficulty which presents itself in the case of ginger is met with here. The problem is to get the essential oil of lemon dissolved by a menstruum which has only very feeble solvent powers for essential oils. If the resulting solution were required to flavor liquids not intended for beverages or culinary purposes, it would be possible to prepare a comparatively strong solution by means of "Poly-solve" (the sulpho-ricinoleate of an alkaline base, preferably sodium; see *AM. DRUGG.*, 1884, p. 22), in which it is quite soluble, the resulting solution being clear and capable of being diluted with water to any extent. Should the solution, previous to copious dilution, be not quite clear, it may be rendered so by addition of a few drops of ammonia.

Of course, it would not be proper to use a solution of this kind for internal use without previously establishing the fact that the sulpho-ricinoleate of sodium, in the quantity contained in the amount of essence to be used, is absolutely inert and innocuous. This proof has not yet been adduced, and, therefore, we desire it to be understood that we have pointed out the above method for making an aqueous solution of oil of lemon or any other essential oil for internal use, merely as a matter of scientific interest.

A good essence of lemon, as strong as it can be made without separating oil or producing turbidity when added to water, may be prepared as follows:

Oil of Lemon.....	20 min.
Alcohol	1 fl. oz.
Water.....	1 1/2 fl. oz.
Phosphate of Calcium, about..	60 grs.
Tincture of Curcuma.....	q. s.

Dissolve the oil of lemon in the alcohol, then gradually add the water, triturate or agitate the mixture thoroughly with the phosphate of calcium, and filter through a wetted filter. Color with tincture of curcuma.

Or the filtered liquid may be kept in contact with fresh lemon peel for some time to impart color to it.

This liquid will not become turbid when added to water.

Our correspondent uses carbonate of magnesium to help to divide the oil and to filter clear. This may, of course, be used, and used to be officially directed in the U. S. Ph. for such purposes, but since it is not quite insoluble, and is apt to render a solution so alkaline that alkaloidal salts may be precipitated thereby, it has been replaced by precipitated phosphate of calcium at the last revision. As long as it is used in essences which are not intended for medicinal use, no harm can result from it.

In the case of essence of peppermint, a still stronger solution may be made by using what is called in trade the quintessential oil. This is prepared from the ordinary essential oil by fractional distillation, and selecting the most highly aromatic fraction. It so happens that this is also much more soluble than the others. Such quintessential oils are only prepared from those essential oils which yield a paying proportion of the fraction desired (such as those of anise, caraway, cassia, ginger, juniper, and peppermint). The quintessential oils are, of course, very much dearer than the original oils from which they are made, that of peppermint, for instance, being about \$24 a pound. Those of coriander and ginger have the same price as that of peppermint. The high price is only an apparent disadvantage, since a smaller quantity of the

dearer oil will, in most cases, answer the purpose, and, as it is more soluble, none need be wasted, which is very generally the case when ordinary essential oils are taken, and the excess of the oil absorbed by magnesia or some other medium.

No. 1,657.—**Specific Gravity Rules** (Ed. J. and others).

Several of our younger readers, who reside in a locality where they have no opportunity of attending college, ask the following questions: "We are familiar with what the text-books teach regarding specific gravity, and understand how it is to be determined, but it is not quite clear to us in what manner the rule was arrived at, 'divide the weight in air by the loss of weight in water, the quotient will be the spec. grav.'" And further: "Why is there sometimes a difference made by writers on this subject in respect to bodies which float on water and in respect to those which sink in water, by establishing the rule: 'Bodies which float on water displace their own weight of the latter; bodies which sink in water displace their own bulk.'"

We will try to make these points clear. First, what do we understand by specific gravity? Simply, the relative weight of equal volumes of two different substances. And since it is necessary to agree upon one substance, as a uniform standard, with which all other (solid or liquid) bodies can be compared, *pure water* has been chosen as such standard, and, no matter what the actual volume of the other substance may be, the weight of this volume is always calculated or determined in figures which refer to *one part* or to *one thousand parts* of water. Supposing a certain measure full of water should hold exactly 1,000 grains of the latter, and the same measure, when afterwards filled with another liquid, should hold exactly 2,000 grains of this, then its specific gravity would be double that of water. Supposing the same measure should hold only 500 grains of another liquid, the spec. gr. of the latter would then be only one-half of that of water. The spec. gr. therefore is a figure which expresses *how much greater* or *how much smaller* is the weight of a given volume of a substance compared with the same volume of water. The arithmetical operation by which it is determined *how much greater* or *how much smaller* one value is than another, is performed by division. If we want to know how much larger 12 is than 4, we divide 12 by 4, and obtain as answer, 3. That is, 12 is 3 times as large as 4. We, therefore, have the rule: To find the spec. gr., divide the weight of a given volume of a substance (as ascertained by weighing it in air) by the weight of the same volume of water.

It is not an easy matter, or at least not always convenient to ascertain, experimentally, the exact weight of an equal volume of water. It may be accomplished approximately, provided the substance is not soluble in water, by such devices as the following:

1. Immerse the body in a measured volume of pure water (at the proper temperature) contained in an accurately graduated cylinder or burette, and observe the increase of volume. The weight of this increase, which may be easily calculated, is the figure sought.

2. Into a vessel provided with a lateral outlet, pour water until the latter begins to flow from the outlet. When all that can flow or drip out has passed, place a weighed beaker under the outlet, and cautiously and slowly immerse the solid in the water, when it will cause a volume of water equal to its own, to flow into the beaker in which it then may be weighed.

Neither of these methods, however, furnishes as accurate results as the indirect method derived from the

physical law (first observed by Archimedes), viz.:

"A body immersed in a liquid loses as much weight as its own bulk of that liquid weighs."

Therefore, if we weigh the body while immersed in water, it will weigh less by precisely the weight of its own volume of water. Deducting, therefore, the weight of the body when immersed, from its weight in air, we find the weight of an equal volume of water. Or, to state it inversely, the weight of an equal volume of water is found for a solid body, by deducting its weight when immersed in water from its weight in air. Or in still other words: The weight of an equal volume of water is the same thing as the loss of weight of the substance in water. Let us now substitute this latter expression (or value) in the rule above quoted, and the rule becomes:

To find the spec. gr., divide the weight of a given volume of a substance (as ascertained by its weight in air) by its loss of weight in water (as ascertained by weighing it under water and deducting this weight from the former).

Regarding the second query, we would say, that the rule, as quoted, is merely one of convenience in teaching, and does not imply that there is one law for floating bodies and another for immersed bodies. Supposing we have a solid piece of glass. If we drop it into water it will sink. If we weigh it first in air, and afterwards in water, the loss of weight in water will tell us how much an equal volume of water weighed, and from this we can calculate the specific gravity of the glass. Supposing we were to remove the lump of glass, heat it until it melts, and blow it into a small hollow and closed bead or globe, without loss of any of the glass. Evidently the weight of the glass in air would remain the same [see remark further on]. But, when immersed in water, it would displace a larger volume than before. By properly adjusting the size of the globe, we might perhaps hit the exact point at which the weight of the water displaced by it exactly equals the weight of the globe in air. In this case, perfect equilibrium would be established, the globe [not the glass *per se*] would have the same specific gravity as the water, and it would remain at whatever level it might be placed in the water. Now, no matter how much larger the globe may subsequently be blown, it never can displace any larger volume of water than it did in the last experiment, when equilibrium was established. Therefore, if increased in size by further blowing, it will no longer stay below the surface, but it will float and only a portion will be immersed. The volume of water thus displaced—as it must always balance the weight of the globe, which remains constant—will therefore remain the same, no matter to what size the globe may be blown afterwards. [We purposely take no account here of the influence upon the results from changes of temperature, the presence or pressure of the inclosed air, and other concomitant circumstances, none of which affect the *principle* involved.]

It must be well understood that only in the first experiment, when we had a solid piece of glass, did we determine the specific gravity of the substance "glass." In all subsequent experiments we had to do with an arbitrarily-shaped glass-globe *plus* air. If we had blown the globe so that it had been provided with an orifice, and if we had filled it with water, it would of course have sunk if immersed in water, and if we had now weighed it, we would have found that its loss of weight was precisely the same as it was while still a solid lump. It is surrounded on all sides by water. When blown into a hollow, closed globe, it is only surrounded on the outside by water, air being on the inside.

These explanations being premised,

it will be seen that the rule which forms the subject of the query is merely a convenient statement of the general law of Archimedes mentioned further above. The rule may be extended thus:

1. Bodies which float at any level in water displace their own weight and their own body of water.
2. Bodies which float on the surface of water displace their own weight and less than their own volume of water.
3. Bodies which sink in water displace their own volume but less than their own weight of water.

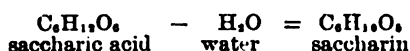
No. 1,658.—Keratin (M.).

This substance, recommended by Dr. Unna as a coating for pills which are not intended to be dissolved in the stomach, is prepared from horn or other parts of animals having the same composition. Quills are best. According to the *Pharm. Central-halle*, quills are cut in pieces, and gently boiled for twenty-four or thirty-six hours with the strongest acetic acid in a flask. [To prevent loss of acid, and its escape into the air, it will be found advantageous to use an upright condenser, thus compelling the condensed acid to flow back into the flask.]

During this time, the quills will have become dissolved to a viscid yellowish-brown liquid, a slight residue only being left behind. The liquid is filtered through glass-wool, and evaporated on a water-bath. The resulting product—keratin—is insoluble in water, hydrochloric acid, or pepsin, but is soluble in alkalis. When dissolved in a little acetic acid, with very gentle heat, it is recommended as suitable for coating such pills as are intended to remain undissolved in the stomach, but to dissolve in the alkaline contents of the intestines.

No. 1,659.—Saccharin (Dr. F.).

Up to within a short time ago, the name saccharin was restricted, in chemical terminology, to the anhydride of saccharic acid:



Dr. C. Fahlberg, of New York, however, has recently discovered a derivative of benzoic acid, namely the "anhydro-ortho-sulphamine-benzoic acid" ($\text{C}_6\text{H}_4\text{CO.SO}_2\text{N.H}$) which has also been named *saccharin*, probably for commercial reasons, in the same manner in which antipyrin, kairin, thallin, and similar other terms are used in place of cumbersome chemical terms. This saccharin is, therefore, no carbohydrate. It is white, crystalline, difficultly soluble in cold, more readily soluble in hot water, and has, even in very dilute solution (1 in 10,000) an intensely sweet taste and an almond-like, not disagreeable odor. Dr. A. Stutzer (whose article on this substance was published in the *Deutsch-Amer. Apotheker-Zeit.*, Oct., 1885) has made experiments with it to ascertain its influence upon the digestive process, and has found that it has either no influence at all, or at least such a feebly favorable one, that—in the dilution in which it is likely to exist (1 in 1,000) when mixed with other articles of food—it may be classed among the innocuous substances. At least it was found that doses of 0.01 to 0.1 Gm. ($\frac{1}{4}$ to $\frac{1}{10}$ grain) given to rabbits and animals had no injurious effect. Saccharin requires for solution 500 parts of water at 15° C. (59° F.), but as it retains its intensely sweet taste even when highly diluted, a very small quantity will be found to be sufficient. It is recommended by Dr. Stutzer as a useful addition to confectionery, in the preparation of artificial liquors, and of powders, pastilles, and medicines, wherever it may be desired to impart decided sweetness to the compound.

It has also been found that saccharin greatly increases the sweetness of grape-sugar and glucose, and that it acts as a preserver for dilute solutions

of sugar. It seems to us, therefore, that there is great likelihood of its being largely employed in the preparation of adulterated sugars, syrups, etc. where a too great proportion of grape-sugar and glucose has heretofore been impracticable, owing to the diminution in sweetness. The fruit-canning trade, which uses large quantities of glucose for preserving pears, peaches, etc., is also likely to avail itself of this agent.

It will, therefore, be necessary to study its chemical reactions, and to find means of detecting and separating it.

No. 1,660.—Water in Essential Oils (M. A. S.).

Nearly all essential oils which have been distilled in the presence of water, contain a little of the latter in solution, from traces up to perhaps 0.25 or 0.3 per cent. When the amount of water is greater than the oil can hold in solution, the latter looks turbid. An essential oil, which becomes turbid when cooled considerably below the average temperature, provided the turbidity is not due to the separation of crystals, is probably saturated with water. The presence of the latter may be demonstrated by dissolving the oil in 4 or 5 volumes of petroleum ether (sp. gr. about 0.670), when the solution will appear turbid if water was present. The water can be removed by placing pieces of fused chloride of calcium into the oil, and occasionally agitating.

No. 1,661.—Quality of Commercial Cocaine (Subscriber).

We have already (in our last volume, p. 197, query 1,337) stated that the quality of the American cocaine, in our experience, is equal to that of the best European makers. In a recent number of the *Pharm. Zeitung* we have met with an article, from the *Droguisten-Zeitung*, in which the cocaine in the European market is divided into two classes; one comprising those qualities which dissolve *without color* in concentrated sulphuric acid, and the other containing those which yield colored solutions. The former kind has been found in all respects to be pure, but is said to be scarce. Next to it comes that variety of cocaine which imparts to cold sulphuric acid a faintly yellow coloration. This color disappears after a short time, leaving the liquid almost or quite colorless. Both of them, when ignited upon platinum, leave no residue or at least only faint traces. All other brands of cocaine color sulphuric acid more or less intensely, and the depth of color varies—so the writer of the paper asserts—according to the source from which the alkaloid is obtained. The German cocaine, he says, usually produces a yellowish coloration with reddish tint; the darker these colors are, the less pure is the alkaloid. A similar behavior is shown by the English brands. Then he asserts that the imported American cocaine mostly produces a rose-red to carmine color; and he adds that the percentage of incom-bustible residue (consisting mostly of calcium sulphate) rises in proportion as the depth of color produced with sulphuric acid increases.

Unfortunately the author, when speaking of *American cocaine*, does not specify whether he means South-American cocaine or such as is produced in the United States. In many parts of Europe, and particularly in Germany, it is quite customary to use the term "America" in a restricted sense for "United States," and therefore a large proportion of the readers of that article will receive the impression that the cocaine imported from the United States is so impure. We know that large quantities of the alkaloid manufactured in New York and other parts of the United States have been sold in the past to

European dealers. Now we have taken some pains to examine several lots of cocaine in our possession, one from the largest American manufacturers (New York) and the others from other sources. We find that the alkaloid imparts to colorless concentrated acid at most only a faintly yellow color, never even approaching to a red tint. So far we have seen no sample which would leave sulphuric acid absolutely colorless.

No. 1,662.—Agaricin (B. B. T.)

Agaricin is not an alkaloid. It is an indifferent principle, is *almost insoluble* in water, altogether so in ether, but rather easily soluble in alcohol. It may be obtained from the fly-mushroom, *Agaricus albus*. Whether any other species of agaricus are used in its preparation is uncertain. What the true chemical nature of composition of the so-called agaricin is, appears to be as yet in doubt. It is not identical with muscarine, a powerful cardiac poison.

Recent clinical experience has confirmed the previous report that this body is an efficient anti-hydrotic. It has been used with uniform success against the night-sweat of phthisis, and, in fact, as a means of suppressing the characteristic perspiration following the administration of various medicines, such as antipyrin, for instance.

At Bellevue Hospital, and other public institutions of New York City, it is regularly employed for this purpose. Since it is almost insoluble in water, it cannot be administered in watery solution together with antipyrin. It is either given in form of powder, or in solution of alcohol and glycerin. The following is a usual proportion:

Agaricini.....	gr. 1
Alcohol.....	℥ 50
Glycerin.....	℥ 50

Dissolve. 10 minims contain $\frac{1}{4}$ grain of agaricin which is an average dose. This may be administered hypodermically; but it is, perhaps, better to administer it by the mouth. Agaricin does not usually act in phthisical night-sweats before five or six hours have elapsed. Therefore, it ought to be given a sufficient time beforehand. In the case of antipyrin, however, it seems to act promptly, if given at the same time.

No. 1,663.—Dimethylacetal as an Anæsthetic (Ch. H.).

We do not think that there is any "dimethylacetal" for sale in this country at present. It is quoted in the price-lists of certain chemical manufacturers of Germany (i. e., C. A. F. Kahlbaum, of Berlin), at 8 marks per 100 Gm., which would bring it, with duty and other expenses, to about \$1.10 per ounce here.

As to its anæsthetic value, we only know that it has been very thoroughly tried by Dr. Fischer, of Strassburg, who gave it, however, always in mixture with chloroform. It has been used in this way, as an anæsthetic, in 150 surgical operations.

Dimethylacetal, or ethidene dimethylate (*German*: dimethylacetal, or æthylidendimethyläther) is a colorless, ethereal liquid, having a fruity odor, boiling at 64° C. (147.2° F.), and having the sp. gr. 0.859 at 140° C. (57.2° F.). It is a natural constituent of crude wood-spirit (5 to 10 Gm. per liter). It is formed when a mixture of methylic and ethylic alcohols are oxidized by means of dioxide of manganese and sulphuric acid. It is prepared most economically by heating a mixture of 1 vol. aldehyde, 2 vol. of wood-spirit, and $\frac{1}{2}$ vol. of glacial acetic acid, to 100° C. (212° F.).

No. 1,664.—Blue Mass (J. G. H.).

"In your March No., 1885, you described mercurial ointment, blue mass and hydrg. cum creta machines. I

tried the latter apparatus, and find it to work very well. Now I want to try the blue mass machine, but don't understand the formulæ for it. It says:

Mercury.....25 lb.
Glycerin.... 2 lb. and 5½ oz.
Water,
Alc.....55 9½ fl. oz.
Powd. Licorice Rt. 3 oz., etc.

It reads on until it says: 'and the honey added with energetic motion.' How much honey must be used? Again it reads: 'And the proper amount of rose leaves, marsh mallow, and licorice root, etc.' How much of these must be used?"

[This is another instance of a fragmentary address, which prevents a reply being furnished by mail. As the essential feature of the paper referred to was the description of an apparatus and the mode of using it, the formula for the compound may be varied, and we would advise the use of the one which is now official, for which see the U. S. Pharmacopœia of 1880, or subsequent editions of the several dispensatories.—Ed. A. D.]

No. 1,665.—Gelatin-coating Pills (J. H. S.).

Machines for gelatin-coating pills are made and sold by various parties. That which is perhaps the most simple, for use on the prescription counter, is Prof. Patch's apparatus, a full description of which was published in this JOURNAL, 1884, page 123.

Other machines are those of Chas. B. Allaire, Maynard, Franciscus, Neynaber, etc., regarding which you will probably obtain the necessary information by applying to some wholesale drug sundries' house, and by reference to our advertising pages.

No. 1,666.—Terpin (E.).

Regarding this substance, we refer you, in the first place, to our last number, page 15, where the results of Lepine's investigations are quoted from the *Revue de Médecine* (and *Ther. Gaz.*). As to the period of its first introduction into medical or surgical practice, there is some difficulty in deciding what the various authors understood by the terms "terebene," "turpene," "turpin," "terpin," etc. J. Ribau, whose article in the *J. de Pharm. de Chim.* you refer to (but which we fail to find quoted in the Dispensatory you mention), speaks of terebenthene and terebene, the existence of the latter of which is denied by Tilden. Bond (*Lancet*, Sept. 16th, 1876) and Waddy (*Brit. Med. Journ.*, June 1st, 1877) recommend "terebene" as an excellent dressing of indolent ulcers and for an antiseptic dressings. Whether they mean the hydrate of oil of turpentine known as terpin, or the polymerized derivative of oil of turpentine, we cannot at present decide. Lepine's article, which is also to be found in the *Medical Times*, 1884, p. 768, at all events leaves no doubt but that "terpin" here means the hydrate.

No. 1,667.—Gelatin Bougies (Junior).

This correspondent says that he tried the process of making gelatin bougies recommended on page 158 of our last volume, but that he found it impossible to dislodge the bougies, and what he did succeed in getting out was not like a bougie at all.

Our impression is that our correspondent did not avail himself of the peculiar elastic properties of the gelatin. It is true that in our previous notice it was recommended to push the bougie through by a rod. This will succeed in case the bougie is very stiff and hard, and the interior of the tube is well oiled. With narrow tubes, however, and a softer mass, it is very

difficult to do this. In such a case it is better to proceed as follows:

Select a glass-tube of such a length that, when filled with the mass, about one inch at either end may be wasted, without making the bougie useless. The shorter a tube can be used the better. For a bore of ¼ inch it should not be over 8 inches in length. Oil the interior of the tube, after being cleaned, and dried thoroughly, best by pouring oil into it. Let this drain out, and immediately fill it with the melted mass by suction, using a bit of rubber tubing and a pinch-cock to prevent it from flowing back. Then put the tube in a cold place. When it is set, crush about one inch of the glass-tubing on one end, so as to strip a short piece of the bougie, and, having fastened the glass-tube in some manner, exert a gentle but uninterrupted traction. This will render the elastic mass thinner, so far as it is free from the glass, and it will gradually peel off all the way up to the other end, or nearly so. When it is found that traction no longer loosens any portion of it, the glass-tube may be cut just this side of this place. We presume that bougies, on a large scale, had best be made in metallic forms, but for making a few bougies sporadically, some process like the above is all sufficient. Sometimes it will be found of advantage to pass a strong thread through the tube before filling it, so that when the bougie is set the string may occupy the centre of the mass. It will then be comparatively easy to remove it.

Formulæ Asked for.

1. Dr. Fowle's Pile and Humor Cure.
2. Blair's Pills (for Rheumatism).
3. Flagg's Instant Relief.
4. Vegetine.
5. Thompson's Eye-Water.
6. Brown's Bronchial Troches.
7. Magic Oil.
8. Thomas' Electric Oil.
9. Barrett's St. Vitus Dance Remedy. [We have never tested this, but would suggest that it be examined by our correspondent, for arsenic.]

About Ants.

WHEN the season comes for the ants to appear and invade kitchens, dining-rooms, bed-rooms, bird-cages, chicken-coops, nests, etc., etc., a few drops of carbolic acid dropped on their runs will promptly drive them back. To prevent them from climbing the fruit trees, I have successfully employed a woollen thread slightly oiled in a ring around the trees. Carbolic acid, in dwellings, gives forth an insupportable odor for certain persons. In such cases, table-salt can be used instead. Spread along the ground a train of table-salt. The ants will not only not cross over this little rampart, but they will even quit their nests, if salt be thrown near the same, and will emigrate far from the salty ramparts. We have not tried this latter means, but persons worthy of credence affirm to us that they have had complete success with salt.—*La Nature*.

Percentage of Dry Quinine in its Salts.—The following table will be found valuable in calculating formulæ.

Salt.	Percentage.
Acetate.....	75.5
Hydrate (the alkaloid precipitated and dried).....	85.7
Basic Chlorhydrate....	81.6
Lactate.....	78.2
Basic Bromhydrate.....	73.5
Valerianate.....	72.9
Basic Sulphate (ordinary sulphate).....	74.3
Sulphovinate.....	72.0
Neutral Bromhydrate.....	60.0
Neutral Sulphate.....	59.1
Tannate.....	20.6

BIBLIOGRAPHY.

AMERICAN MEDICINAL PLANTS: An Illustrative and Descriptive Guide, etc. By MILLSPAUGH. New York and Philadelphia: Boericke and Tafel, 1886.

THE third fascicle of this work, just at hand, contains parts 11 to 15 and consists of thirty plates with the text relating to the following simples:

Æsculus Hippocastanum (Horse chestnut), *Agrostemma Githago* (Corn cockle), *Aralia racemosa* (Spikenard), *Asclepias tuberosa* (Pleurisy-root), *Asimina triloba* (Pawpaw), *Baptisia tinctoria* (Wild indigo), *Benzoin* (Spice-bush), *Cichorium Intybus* (Chicory), *Cimicifuga racemosa* (Black cohosh), *Conium maculatum* (Poison hemlock), *Cornus florida* (Flowering dogwood), *Drosera rotundifolia* (Sundew), *Eupatorium purpureum* (Purple boneset), *Eupatorium perfoliatum* (Boneset), *Fragaria vesca* (Wild strawberry), *Kalmia latifolia* (Mountain laurel), *Lobelia inflata* (Indian tobacco), *Lappa* (Burdock), *Monotropa uniflora* (Indian pipe), *Populus tremuloides* (American aspen), *Phytolacca decandra* (Poke-weed), *Plantago major* (Plantain), *Rhus aromatica*, *Rhus glabra* (Smooth sumach), *Rhus Toxicodendron* (Poison ivy), *Stramonium* (Thorn apple), *Sarracenia purpurea* (Pitcher-plant), *Triosteum* (Feverwort), *Verbascum Thapsus* (Mullein), *Xanthoxylum* (Prickly ash).

This covers the first half of the work which, when finished, will contain about 180 descriptions. The work of the author and publisher is very creditable; the illustrations in color being very handsome and the text full of interesting material. We have no recent work on indigenous drugs that approaches to this in completeness or beauty, and it deserves a very liberal encouragement.

THE CHEMISTS' AND DRUGGISTS' DIARY, 1886. Eighteenth Year.

THIS annual volume presents its usual robust appearance, so far as relates to its complement of advertising matter. The text, in addition to matters of legal nature especially calculated to benefit British pharmacists, consists largely of a comment upon the pharmacy of the new British Pharmacopœia.

SIXTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH, LUNACY, AND CHARITY OF MASSACHUSETTS. Supplement containing the Report and Papers on Public Health. Boston: 1885, pp. 403, 8vo.

THE portions of this report of especial interest to pharmacists are the Second Annual Report relative to the Adulteration of Food and Drugs; The Relation of Illuminating Gas to the Public Health; A Study of the Relative Poisonous Effects of Coal and Water Gas, and the article on Disinfection. All of these papers will be found to add important facts to the literature of the respective subjects.

DRUGS AND MEDICINES OF NORTH AMERICA. Cincinnati: J. U. & C. G. Lloyd, 1875.

THE December number of this elegant quarterly, embracing pp. 241 to 272, completes the description of *Actea*, and commences that of *Cimicifuga racemosa*. The plates and the illustrations in the text are numerous and elegant, and the text is exhaustive of the subject.

DRUG merchants report that the peppermint oil market has not been so lively in many years as during the past month. Prices have advanced about 50 per cent in view of the demand. Following so close to an unprecedented apple crop and an increased make of cider, the large demand for peppermint is suggestive.

American Druggist

Vol. XV. No. 3.

NEW YORK, MARCH, 1886.

Whole No. 141.

[ORIGINAL COMMUNICATION.]

SAFETY APPLIANCE FOR POISON BOTTLES.

BY FRED. STOCKTON, OF WHEELING, WEST VIRGINIA.

THE mistakes of Moses (notwithstanding the opinion of a very learned gentleman, who has aired the errors of Mr. Moses in nearly every city of the Union) were not as many, it seems to me, nor as *fatal* as the mistakes of druggists of the present day. I have perused, with a great deal of interest, the many articles touching on this subject, and the theories advanced for prevention of "cruelty of druggists" or loss of life by their mistakes. The errors in dispensing that have come under my observation seem to be the result of *carelessness* rather than of *ignorance*. A druggist who will put 20 grains of morphine into a prescription when that amount of quinine is ordered is careless, or his mind is not entirely on the work he is doing, as it should certainly be. Now if his attention were called, in some way, for a second, to what he was doing when he had the morphine bottle in his hand, he would surely see his error at a glance. Any

as a handle in removing the same. It has advantages over anything I have seen, inasmuch as it is easily removed and replaced, and is easy to hold while using the package. Its simplicity will also make it cheap, so that every one may obtain it at a small cost.

In the *Scientific American* for February 20th is a description of a bottle-stopper invented by Mr. J. H. B. Howell, of Newton, N. J., which demands a special degree and kind of manipulation for the removal of the stopper, wherein the attention of the operator is secured. A lug is formed near the lower edge of the inside of the cover which engages the zigzag groove formed in the outer surface of the neck of the bottle. In order to remove the stopper or replace it the stopper must be turned and raised or lowered to correspond to the direction of this groove. As an additional means of attracting attention the top of the cap is provided with a number of projecting points.

Tannate of Mercury.

E. MERCK prepares tannate of mercury in form of brownish-green scales,

[ORIGINAL COMMUNICATION.]

YERBA SANTA AS A VEHICLE FOR QUININE.

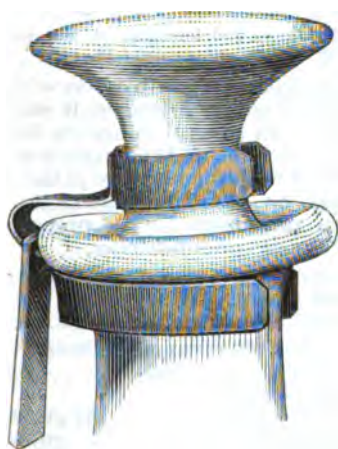
BY J. D. AUG. HARTZ, OF COLLEGE POINT, L. I., N. Y.

A VEHICLE for the successful masking of the bitterness of sulphate of quinine has long been a desideratum to practitioners. This want has been partially met by individuals and firms offering secret elixirs, fluid extracts, etc., which more or less accomplished their purpose, but were mainly designed to enrich the compounds.

Yerba santa, glycyrrhiza, and coffee have in turn been employed, the former with the best results.

A western firm discloses this ingredient in the name of a preparation offered for disguising quinine; other firms hide this drug under fictitious names.

With a view of producing a compound which, by its non-secrecy, may obtain the approval of physicians who desire to prescribe intelligently, and in order to avoid the vexation to pharmacutists by being compelled to keep on their shelves a number of preparations all designed for the same purpose, I have, after repeated experi-



Stockton's stopper-guard.



Howell's safety stopper.

one who has any business to compound a prescription or dispense medicines, most assuredly knows the difference between *quinine* and *morphine*, or tincture of aconite and tr. of orange; and if he substitutes one for the other it is a plain case of carelessness. A great many suggestions have been made and ideas advanced in the different drug journals to *prevent fatal mistakes*, but every day new cases are brought to our notice from different parts of the country. That something should be done to correct this seeming carelessness is apparent. Good laws have been enacted in nearly every State restricting the sale of poisons, the compounding of prescriptions, and the dispensing of medicines by incompetent persons. But the majority of fatal errors have been made by persons of years of experience in prescription business.

I inclose photographs of a simple device which, it seems to me, will go a great way in preventing mistakes, and which, through the kindness of a friend (a photographer), I have been able to obtain, as it is not placed, as yet, on the market. It consists of two pieces of spring steel or brass, compressed to fit the neck of the bottle and the stopper, and fastened together by a small middle piece with a stamped metal poison-label, which serves

which form a grayish-green powder when triturated. It is the mercurous tannate, and contains at least 40 per cent of mercury. Concentrated acids or alkalis decompose the salt, metallic mercury being separated in small globules. Diluted hydrochloric acid attacks it but feebly. When treated with water or alcohol, the tannin is dissolved.

This compound was first proposed, in 1884, by Dr. Sigmund Lustgarten, of Vienna, and its efficacy in syphilis tested by Prof. Kaposi. It was found to be a mild antisypilitic, and is said to produce salivation or stomatitis but rarely. The mercury is separated in such a fine condition that it is rapidly absorbed through the intestinal canal.

It is best given rubbed up with four times its quantity of sugar of milk, and inclosed in wafer-capsules. Usual dose $1\frac{1}{2}$ grains, 3 or 4 times a day.

Acetic Ether in Illuminating Gas Poisoning.

A PHYSICIAN who has had some experience with workmen in gas works says that a few drops of acetic ether, administered on sugar, will usually revive persons who have become insensible from inhaling illuminating gas.

ments, compounded a mixture for which the name of "*Syrupus corrigens*" is proposed. One fluidrachm will so obliterate the taste of two grains of quinine that only a slight bitterness is perceptible some time after the medicine has been taken.

The first step in preparing it is to exhaust twenty-five ounces of powdered yerba santa (the powdering can be easily accomplished in a drug-mill to a degree of fineness that sifting can be dispensed with) with a menstruum of one volume of alcohol and two volumes of water, regaining the alcohol by distillation, and reducing the remainder over a water-bath to twenty-five fluidounces. In the still, and also in the evaporating dish, will be a copious deposit of resin which seems unessential for the purpose, and is designedly separated, as an alcoholic fluid extract of yerba santa would produce an unsightly mixture.

The next step is the preparation of a syrup by intimately mixing in a mortar three hundred minims of oil of sweet orange with three ounces of finely-powdered phosphate of lime, gradually adding three fluidounces of alcohol, and afterwards, also very gradually, eighty-five fluidounces of water. Transfer the mixture to a bottle, add one hundred and fifty minims of purified chloroform, and shake

vigorously for half an hour, filter, and dissolve in the filtrate one hundred and forty ounces of sugar, add the fluid extract and enough water to make two hundred fluidounces.

The writer would urge a trial of this syrup, as it seems to fulfil its purpose as well as any of the secret preparations which have come under his observation.

NOTES ON PRACTICAL PHARMACY.*

(Continued from p. 23.)

COMPRESSED POWDERS.

It depends entirely upon the nature of the powder, whether it can be compressed into tablets when dry, or whether this can be done only after it has been moistened with alcohol. There are special appliances for this purpose, but the same result may be attained by the use of the pastille-makers described previously. If the stamp *P* (see cut on page 21) is movable by means of the thread of the screw, a powerful compression is obtained. Digne's Compresso-Doseur (sold by apothecary R. H. Paulke in Leipzig) is an instrument especially adapted for this purpose.

As these compressed masses adhere to the gastric mucous membrane for some hours, and, through it, exercise their functions, before they are dissolved or mix with the gastric juice, the lining of the stomach cannot be otherwise than unfavorably affected, and its normal condition disturbed, by many of the substances used in them. This form of medicine is employed by very few physicians. Although they have been known for the last ten years, there are only a few places in Germany where they have met with a favorable transitory reception.

CONES AND SPIRALS.†

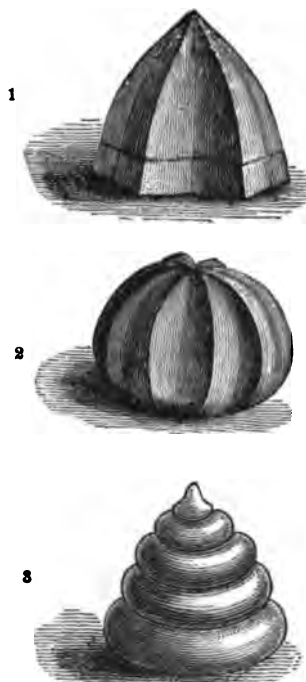
Cones or spirals, *tabernacula*, *turbinule*, are designations for dry, very light, brittle, fluted spiral cones, from two to three centimeters in height, made of albumen of egg and sugar. Thus far, the only cones in this shape which have come into the market are those of santonin. They are made of a warm mixture of santonin, powdered sugar with starch, white of egg beaten into froth, and some tragacanth, made into little balls by means of a small white metal syringe, with a star-shaped orifice for the mass to pass through. The preparation of these cones is entrusted to the confectioner, to whom is given a definite mixture of santonin and sugar, with directions as to the number of cones to be made. The division of the doses of santonin in this form is very unreliable, and most especially so in the hands of the confectioner! Physicians have, thus far, rightly taken no notice of this form of medicine, and the santonin cones have remained merely articles of commerce in the hands of the apothecaries, where they often remain, packed in cotton, awaiting consumption. It would be desirable if apothecaries would replace these santonin cones by the official santonin pastilles. The following is the prescription for their preparation:

SANTONIN CONES OR SPIRALS, WORM-CANDIES. 250 parts SUGAR, 25 parts WHEAT STARCH POWDER and 1 part TRAGACANTH finely powdered are mixed together, and 250 parts ALBUMEN OF EGGS, which has been beaten to a stiff froth, added thereto with constant agitation, and evaporated in a moder-

ate heat (50 to 60° C.) stirring all the while, until the mass will no longer drip off from a wooden spatula. A mixture of 5 parts SANTONIN and 10 parts SUGAR, in power, is then carefully stirred into the mass, which is then put into an icing-syringe (a confectioner's utensil) and formed into cones so that each one contains about 0.025 grammes of santonin. The cones, having been spread out on porcelain surfaces, are then dried in a shady, moderately warm place, and kept in tin boxes packed in cotton.

BACILLULA.

BACILLA, *Bacillula* are a new form of medicine which have made their appearance in some places. They have the appearance of small, nearly cylindrical rods, and in their composition, preparation, and consistency they bear a close resemblance to pastilles, except



Santonin Cones:—1, Pyramidal shape; 2, Star shape; 3, Snail shape.

that there is less of detail in their preparation, which is easily and more quickly attained with the help of a pill machine. *Bacillula* are made from 0.3 to 0.6 grammes (4-9 grains) in weight, and from 1.0 to 1.5 centimeters ($\frac{1}{4}$ - $\frac{1}{2}$ inch) in length. *Bacillula* are given in cases where the patient has a repugnance to pastilles, or when the physician wishes to administer a medicine of small volume, or in a different form.

The division of the mass from which *bacillula* are made is done by means of the pill machine in precisely the same manner as that employed for pills, except that the pill-strand is not formed into pills, but only cut into pieces and each portion rolled lightly



Bacillula of various sizes.

under the middle finger on the board of the pill machine, in the direction of its long axis, so that the somewhat rough places at which the pieces were attached to each other are to some extent smoothed off. *Bacillula* are consperged with lycopodium, if no other is prescribed.

The *bacillula*, when finished, are allowed to dry for an hour at the ordinary temperature, and then for half an hour in a moderately warm place. The manufacture of from 20 to 50 *bacillula* requires about two hours,

R Morphine acetatis.....	0.0025	gr. $\frac{1}{4}$
Ligni Santali rubri pulv.....	0.005	" $\frac{1}{8}$
Sacchari albi.....	0.5	" 8
Aque glycerinatæ.....	q. s.	

M. ut fiat bacillum. Dentur talia bacilla 100. S. One every four hours.

R Morphine acetatis.....	0.25	gr. 4
Ligni Santali rubri.....	0.5	" 8
Tragacanthæ pulv.....	2.0	" 30
Sacchari albi.....	50.0	" 770
Aque glycerinatæ.....	10.0	" 150
Aque destill.....	gtt. 10	vel q. s.

M. fiat massa, ex qua formentur 100 bacilla.

Bacillula should not be confounded with little staves known as *bacilla*,* an antiquated form for the administration of medicine, little used at the present time, but which are sold by apothecaries, such as anise rods, or purified licorice. These little staves were made from 4 to 10 centimeters ($\frac{1}{4}$ -4 inch.) and upward, in length, and 0.5-0.7 centimeters ($\frac{1}{8}$ - $\frac{1}{4}$ inch) in thickness.

SUGAR GLOBULES.—SUGAR LOZENGES.

SUGAR GLOBULES, **SUGAR LOZENGES**, *Rotule Sacchari* are white cakes, each about one centimeter in thickness, in the shape of segments of a sphere, which, when saturated with oil of peppermint, constitute the favorite peppermint lozenges. The physician sometimes selects them to administer an ethereal oil or some medicinal fluid in small doses. Should this fluid be of



Sugar globules and lozenges. A, side view; B, upper surface.

small quantity in comparison with the number of sugar lozenges, it must be diluted with several times its bulk of absolute alcohol, and the sugar lozenges saturated with the mixture in the same manner as the Pharmacopœia Germanica prescribes for the preparation of *rotule menthæ piperitæ*.

R Rotularum Sacchari.....	20.0
Olei Anisi.....	
Olei Fœniculi.....	55 gtt. 20.
or, with the intervention of alcohol:	
R Rotularum Sacchari.....	20.0
Olei Anisi.....	
Olei Fœniculi.....	55 gtt. 20
Spiritus Absoluti.....	gtt. 30

MORSELS.

MORSELS, *Morsuli*, are parallelepipeds, or quadrangular oblong tablets, about 5.0 centimeters long, 2.5 wide, and 0.5 thick (2 inch. \times 1 inch \times $\frac{1}{4}$ inch). This form of medicine has almost entirely fallen into disuse.

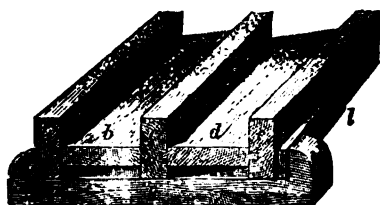
Morsels are prepared in the following manner: the sugar having been broken into small pieces, is boiled with one-quarter of its weight of water in a copper (not tinned) pan which is furnished with a lip, over a coal fire without stirring until it assumes a feathery consistency. When a portion of the mass taken out with an iron spatula and thrown briskly through the air falls in the shape of light feathers, the sugar has reached a point at which it is to be taken from the fire and stirred with a spatula until it begins to lose its transparency somewhat, and the ingredients, for example powders, almonds cut in fine pieces, coarsely powdered spices, etc., are then mixed in and stirred round. The mixture, still in a fluid state, is then poured into narrow four-cornered paper capsules, and as soon as it is half cold, divided into oblong four-cornered pieces, with a sharp and very thin-bladed knife. Instead of the paper capsules, a morsel-mould may be used. This consists of three long splints (*a*, *c*, *e*) which are held together by two cross-pieces (*b*)

* Some of the text-books incorrectly give *bacilli*, but the nominative singular is *bacillum*. The word *bacilline* does not exist in the Latin language.

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

† These cones, as well as the bacilla next described, are not used in this country.—Ed. Am. Dr.

and d) of equal dimensions. The long splints and the cross-pieces are brought into reciprocal and firm connection by means of two or three clamps (k) and with the aid of wedges (e). The length of a morsel-mould is about 80 to 100 centimeters (31-39 inch.), the thickness of the long splints 4 centimeters (1½ inch.), that of the cross-pieces 3 centimeters (1¼ inch.), the distance between each two of the long splints, 4.5 to 5.5 centimeters (1¾-2¼ inch.). All the parts of the mould can easily be separated one from the other, and are made of straight-grained oak-wood. The morsel-mass is poured into the space be-



Section of morsel-mould.

tween the long splints, which should have been wiped off with a moist sponge just previously, and then quickly spread out with a spatula into a layer as nearly as possible of a uniform thickness, and the mould then shaken and knocked against its support so as to obtain a smooth upper surface for the mass. When the mass is half hardened, the wedges must be knocked out, the long splints taken off, and the mass while yet warm, cut into pieces with a thin-bladed, sharp knife.

In the preparation of morsels with lemon-juice, finely-powdered sugar is mixed with one-eighth of its weight of lemon-juice, heated to the boiling point, and after long-continued stirring the semi-fluid mass is poured into the form.

CONSERVES.

CONSERVES, *Conservæ*, are mixtures of vegetable substances with sugar to the consistence of a thick electuary. They are generally made of fresh herbs. The fresh leaves, flowers, etc., having been cleansed from dust and sand by shaking and washing, are triturated in a stone mortar, with a wooden pestle, into the finest or softest possible pulp, mixed with about twice its quantity of powdered sugar, and thoroughly worked together, and the homogeneous pap rubbed through a coarse hair-sieve. The addition of the sugar is only to be continued until the pap is of the consistence of a thin electuary that can easily be rubbed through the hair-sieve. The sugar needed to make a stiff electuary should be added to the mass that has been rubbed through the sieve. Vegetables that are rich in sap require three to four parts of sugar, those less rich in sap two to three.

The *Conserva Rosarum* is made either from fresh red rose leaves with twice their amount of sugar, or from the powder of dried leaves which have been macerated for several hours in double their quantity of rose-water, with an addition of eight times their quantity of sugar.

PASTES.

PASTE, *Pasta*, is a comprehensive designation of medicaments which have the consistence sometimes of boli (*pasta mollis*), sometimes of pill-mass (*pasta compacta*), and sometimes of morsels (*pasta dura*). If the prescription does not designate the degree of consistence, and the dispenser has the choice, he should make it of the consistence of boli. Cocoa paste and those that are formed from it, are always hard when cold. Pastes for external use have commonly the consistence of a stiff electuary, or that of boli.

GELATIN LAMELLÆ.

Many years ago a kind of medicine in the form of thin, dry gelatin tablets, known as *gelatina medicata in lamellis s. gelatina lamellata*, was recommended (Almin in Upsula) under the claim of being better and more lasting. Although this form of medicine has up to the present time gained no acceptance, and will probably find it difficult to do so in future, still the prescription for it is given, in case a physician should happen to require it.

[Dr. Hager is mistaken when he states that this form of administering medicines has found no acceptance. On the contrary, such gelatin doses have been used considerably, particularly for making applications to the eye, and the last Brit. Pharm. has officially recognized three different kinds, containing atropine, cocaine, and physostigmine respectively. — ED. AM. DRUGG.]

Gelatin lamellæ are usually prepared by dissolving gelatin or white gum in distilled water, to which is added a little glycerin and the desired drug, and the mixture having been dried on glass plates, the gelatin sheets thus obtained are cut into squares, each of which contains a definite quantity of the medicinal matter.

The process can be accomplished in the following manner: On a smooth slab of slate a space of 100 (10x10) square centimeters is laid off in 100 squares by scratching the slab with the corner of a steel chisel, in such a manner that the dividing lines make perceptible furrows. This space is then surrounded with a frame of small wooden staves which are attached to the slate-slab by means of gum-mucilage. The squares and furrows are then painted by means of a brush with a thin, warm solution of 5 parts paraffin, and 1 part olive oil, in 30 parts benzin. This coating should be allowed to dry thoroughly before pouring the gelatin-solution on the squares.

The gelatin-solution consists of 2 to 3 grammes of white gum, or pure gelatin, 5 to 10 drops of glycerin, and 50.0 grammes or cubic centimeters of distilled water, in which the medicinal substance, for instance, *extractum opii*, *morphine salts*, is dissolved, or suspended in the form of an emulsion.

The gelatin-solution, still at a heat of about 40° C., is then poured over the square divisions of the horizontal slate slab, so that the space inside of the frame is filled thereby. It is then to be exposed for several hours at the ordinary or moderate temperature, and then to a heat of about 30° C., or to such a heat as will not melt the gelatin sheet. When the sheet has become dry and hardened, it is removed by means of an eraser, and cut with shears into square pieces of equal size, which is readily done, since the gelatin sheet is marked with elevated lines corresponding to the ridges cut into the slate. The drying of the gelatin-solution can also be done on glass plates. From one to two days are required for the drying of the gelatin layer.

(To be continued.)

Extract of Kava Kava as a Local Anæsthetic.

DR. LEWIN, of Berlin, finds that the resinous extract derived from the root of *Piper methysticum*, which is soluble in alcohol, possesses the power of causing local anæsthesia. It has a somewhat aromatic taste, followed by a sense of pricking and burning, which is soon lost in the local insensibility which follows. When a solution of the extract is injected under the skin, the tissues in the neighborhood fail to respond to stimulation by heat, chemicals, or electricity, and its effects are not followed by inflammation.

Lanolin: A New Base for Ointments.

At a meeting of the Berlin Medical Society, held on Oct. 28th, 1885, Professor Oscar Liebreich read a paper on *lanolin*, the new base for ointments, from which we abstract the more important and interesting portions.

Lanolin is such a peculiar substance that it deserves to occupy a distinct place in the series of fatty bodies, separate from ordinary fixed oils or fats (so-called glycerin-fats), as well as from mineral oils or fats. Prof. Liebreich's experiments have already shown that it fulfils conditions not attainable by any other fatty bodies, as a vehicle for endermic medication.

The use of plasters and ointments, at certain periods regarded as a subordinate form of treatment, has recently again attracted the attention of pharmacologists, since it has been demonstrated that the local application of certain remedies in quite a number of diseases is of undoubted advantage.

It has been shown by Fr. Hartmann and E. Schulze that the fat of sheep's wool, commonly called suint, differs from ordinary fats by its fatty acids being combined with cholesterin. And Schulze subsequently proved that a portion of the fatty acids was also combined with ischolesterin. Although cholesterin is a very common constituent of the animal organism, it appears singular that these observations of Hartmann and Schulze have been almost entirely overlooked by physiologists. These very compounds, moreover, had been known to chemists since 1860, when Berthelot obtained a series of cholesterin-fats by heating cholesterin with fatty acids. And Berthelot even advanced the supposition that these fatty compounds played some important rôle in the organism, without, however, being able to prove his guess.

As soon as the presence of cholesterin-fats had been recognized in sheep's wool, the question arose, whether this was a solitary occurrence—such as the existence of spermaceti in the cranial cavity of the sperm whale, and in the oil-bag of the goose—or whether they were more broadly distributed, like the glycerin-fats.

The investigation of the cholesterin-fats, which was at first quite difficult, owing to the absence of decisive tests of identity, was rendered possible by Liebermann's discovery of a reaction for cholestol, a body closely related to cholesterin, which is as follows: a portion of the fat—and a very small amount is sufficient—is dissolved in acetic anhydride (C₄H₆O₂); not to be confounded with anhydrous acetic acid, C₂H₄O₂. Upon addition of concentrated sulphuric acid there is at first produced a rose-red color, which soon changes to deep blue or green. The acid must be added with great caution; the smaller its quantity the more distinct will be the colors produced. Prof. Liebreich suspected that this reaction would also be applicable to cholesterin, and found this confirmed by experiment. Cholesterin-fats, which were known to contain not a trace of free cholesterin, gave the cholestol reaction with great distinctness, while glycerin-fats of various composition never responded to it. Even such substances as protagon—the disputed existence of which is now established beyond a doubt—lecithin, spermaceti, and beeswax gave negative results.

In his search for cholesterin-fats, Prof. Liebreich first examined those tissues which contain keratin ("horny substance"), viz., the human skin, hair, fish-bone, tortoise-shell, hoofs, feathers of different animals, etc., etc. In all of these, the presence of cholesterin-fat—which was extracted by chloroform—could be detected by the above test. In addition to the latter,

its presence and identity was proven by its capability of taking up over 100 per cent of water. Prof. Liebreich has applied the term "lanolizing" to this property, which was first observed in suint, and is inherent in nearly all cholesterin-fats, while mixtures of glycerin-fats and cholesterin are devoid of this property.

[Prof. Liebreich then gives a detailed account of the views entertained by others and himself regarding the function of the so-called oil-bag in birds, and its relation to the fat deposited in and upon feathers. He then discusses the origin of the fat in animal hairs. It is generally supposed that its presence in the hair is due to its secretion by the sebaceous glands. But he points out that the hair of certain animals in which the sebaceous glands are scarcely at all developed, nevertheless contains cholesterin-fats. And he has, moreover, found that the hairs of one animal which has no sebaceous glands at all, viz., the sloth (*Bradypus cuculliger*), gives the cholesterol reaction. He believes that the sebaceous glands furnish fat to the exterior surface of the hairs, keeping them pliable and more or less water-proof. But this fat he regards as distinct from that which is contained in the horny substance itself.]

The author states that there is one, or possibly more than one horny tissue which contains a fat differing from the cholesterin-fat; such is the case, for instance, in the feathers of the penguin.]

Up to within recent times, neutral glycerin-fats have been employed for the preparation of salves and plasters, and for some years past, many of them have been prepared with mineral fats, such as vaseline. The German Pharmacopoeia even adopted an artificial mixture, made from solid and liquid paraffin, under the name Unguentum Paraffini. But there are decided objections against the latter, among them being this, that its constituents very commonly separate under the influence of the heat of the body. Salves made of common fats often suffer decomposition when applied to the skin, whereby irritation is liable to be produced; besides, the resorption of medicinal substances mixed with the fat is quite imperfect. Though vaseline is not subject to decomposition, absorption of substances mixed with it is still more difficult. [It has been shown, however, that even vaseline or other petroleum ointments are liable to become rancid, and A. Joeres has shown that medicinal substances mixed with petroleum ointment are by no means rejected by the human skin. See our vol. for 1885, page 148.—ED. AMER. DRUGG.]

Prof. Liebreich was particularly struck by the fact that cholesterin-fats are very easily absorbed by the skin. Since they are derived from tissues containing keratin, he believes the former property to be connected with this relationship.

He has applied the name *lanolin** to the combination of the neutral cholesterin-fat with water.

Jaffé and Darmstädter, of Charlottenburg, manufacture lanolin by emulsifying suint or wool-fat to a thin milk, and subjecting this to centrifugal action. The result is similar to that observed in churning milk: there is obtained a skim milk or whey and a thick cream, which latter is pure lanolin.

This substance is capable of taking up more water than any other fatty body known. More than one hundred per cent may be incorporated with it by kneading, the result being a light-yellow, very plastic salve. The fat does not dissolve in water, but on the addition of soap and alkalies, a thick

milk is at once formed. A very important property of the substance is its absolute neutrality.

Lanolin being so resistant to the effects of alkalies, a spontaneous decomposition of the pure product is impossible. It mixes readily with glycerin and other fats, and may thus be made into very handsome, cream-like salves. It possesses a slight odor.

As an instance of its readiness to part with medicinal substances mixed with it, Prof. Liebreich states that a small lump of lanolin ointment (of the size of a pea) containing five per cent of carbolic acid, when rubbed into the hand, produced numbness after one or two minutes, without any caustic effect. Corrosive sublimate salve (1 in 1,000) made with lanolin, on being rubbed into the skin, is so rapid in its effects, that the characteristic metallic taste due to mercurial resorption is noticed already after a few minutes.

Since lanolin is so rapidly absorbed by the skin, that it will not even stand long friction without leaving the skin dry, it is advisable to mix it with 5 to 10 per cent of fat or glycerin. Mercurial ointment, for instance, may thus be prepared. These ointments or salves may become a little dry and darker at the surface, but this is no sign of any decomposition.

[Lanolin may shortly be obtained from the importers through any wholesale drug house.]

Iodol.

In our last December number (page 224), we gave a brief account of this new antiseptic, which we now supplement by further information derived from the report of Dr. Vulpius (in the *Arch. der Pharm.* and abstracted in the *Pharm. Post*).

The crude material used at present for the preparation of iodol, but which is likely to be replaced by a cheaper one in the course of time, is the volatile animal oil, so-called "Dippel's Animal Oil." This is known to contain bases belonging to the pyridine and chinoline series, nitrites of the fatty acid series, phenol and its homologues, naphthalin and other hydrocarbons, and besides also considerable proportions of pyrrol and its methyl derivatives. According to the process, for which a patent has been applied for, iodol is prepared by freeing the pyrrol (C_4H_7NH) as much as possible from accompanying substances, and its solution is afterwards treated with solution of iodine in iodide of potassium whereby tetra-iodo-pyrrol (C_4I_4NH) is precipitated in a crystalline state, while at the same time 4 molecules of hydriodic acid is produced. And it is the tetra-iodo-pyrrol which has been given the shorter name of *iodol*.

In the condition at which it is at present sold, it appears as a light-brown powder, which becomes darker on exposure to light, and should, therefore, be kept in the dark. [When perfectly pure it is said to suffer no alteration by exposure to light.] It is almost tasteless, and has a faint odor resembling that of thymol. Under the microscope it appears as a débris of considerable fragments of lamellar and columnar crystals, of a slight yellow color. On being heated to $212^\circ F.$, iodol does not appear to alter, nor does it lose sensibly in weight when heated at that temperature in an open capsule. When heated more strongly, it gives off copious vapors of iodine, and finally yields a very voluminous charcoal, difficult to reduce to an ash.

Iodol has no affinity for water, and, in fact requires at least 5,000 parts of it for solution. This is a disadvantage. On the other hand, it is very soluble in alcohol, requiring only 3 parts of absolute alcohol, which is much less than iodoform needs. The solubility, however, diminishes so rapidly with

its aqueous dilution, that the addition of 25 per cent of water to a 10 per cent alcoholic solution of iodol already causes a milky turbidity, owing to the separation of this body. In the same manner, a 5% alcoholic solution will stand but little more than 30, one of 2% little more than 50, one of 1% little more than 80, and one of 0.5% only about 100 per cent of water, without becoming turbid.

Different results are obtained when glycerin is added. Though iodol is soluble in glycerin only with the aid of heat, and even then very slightly, still a 20% alcoholic solution of iodol can be mixed with an equal volume of glycerin (as anhydrous as possible) without producing turbidity; and a 10% solution even with four times its own volume. These solutions are all rendered turbid by the addition of water.

Iodol requires less than its own weight of ether for solution, but it requires not less than 50 parts of chloroform. Benzine, paraffin, or oil of turpentine do not dissolve it sensibly, but it is soluble when warmed with carbolic acid of 90%, from which it is, however, separated again on cooling, in needle-shaped crystals. Fatty oils dissolve iodol but very slightly in the cold, but olive oil dissolves as much as 15% by the heat of a water-bath, and, on cooling, this does not at once separate again. All stronger solutions of iodol have a more or less dark tint from the very beginning, aside from the effect which light may subsequently have upon them. The same is the case with mixtures of iodol with fat or vaseline. Iodol is also copiously dissolved by aqueous solutions of alkalies (also ammonia), but is separated again when the alkalies are neutralized with an acid.

To show the presence of, or prove the identity of iodol, the following two reactions may be used—aside of the fact that strong heat causes the evolution of violet vapors of iodine: 1. On adding nitric acid to an alcoholic solution of iodol, heated on a water-bath, a deep ruby-red color is produced, which is destroyed by sulphurous acid or hyposulphite (thiosulphate) of sodium (and is therefore due to a separation of iodine). And 2. Iodol dissolves with a bright-green color in concentrated sulphuric acid, this color afterwards passing into brownish. On heating this sulphuric acid solution at $212^\circ F.$, copious vapors of iodine are evolved, and if it be poured into water, iodol of a reddish-brown color is precipitated.

Iodol is employed either in form of fine powder, dusted or sprinkled on, or made into a salve with petroleum ointment, or in form of solution as follows:

Iodol.....	2 to 3 parts.
Alcohol.....	35 "
Glycerin, to make...	100 "

Iodol contains 88.9 per cent of iodine, while iodoform contains 96.6 per cent. Now, though the former contains somewhat less iodine than the latter, yet, for the present at least, the former commands a higher price,* chiefly because its process of manufacture and the crude materials required for the latter are much more expensive than in the case of iodoform.

Iodol was discovered by Drs. G. Ciamician and P. Silber, of Rome, and is now manufactured on a considerable scale (which will probably be much increased) by Kalle & Co. (aniline works) of Bibrich on the Rhine.

As a supplement to the above, we give an abstract of a paper by the discoverers of iodol (in the *Ber. d. Deutsch. Chem. Ges.*, 1885, 1766) in which they give a modified method of producing iodol, namely: by acting

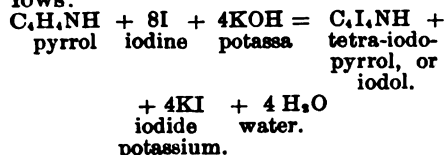
*From lana, wool, and oleum, oil, "wool-oil."

* A small invoice recently on the market sold for \$2.25 per ounce.

upon pyrrol with iodine in presence of an alkali.

2 Gm. of pyrrol are dissolved in water containing a little potassa, and a solution of 30 Gm. of iodine in iodide of potassium gradually added with frequent agitation. The first drops of the iodine solution produce already a very dark color, and gradually there is formed a dirty bluish-green precipitate. When the whole of the iodine solution has been added, the liquid over the precipitate has a pea-green color. The bluish-green precipitate is collected on a filter, washed with water, then dissolved in hot alcohol, and this solution boiled for some time with animal charcoal. The yellowish-brown filtrate, when treated with water, deposits a voluminous, flocculent, yellowish precipitate, which is separated and recrystallized from hot, diluted alcohol. The product appears in light yellow microscopic needles.

The reaction, without taking into consideration the iodide of potassium used to dissolve the iodine, is as follows:



Mizu Ame or Japanese Maltine.

DR. J. C. BERRY, of Okayama, gives the following account of the manufacture of mizu ame in Central Japan:

1. *Malt (moyashi)*. Made by putting barley into a pail with a perforated bottom, and then moistening with water for two weeks, by which time (varying with the weather) the barley germinates. Spread and dry, rub off the sprouts, winnow and grind, when it is ready for use.

2. Of *mochi-gome* (the very glutinous rice from which the *mochi* is made) 1 *to*,* cook the rice by steaming in a wooden box until moderately soft. Remove to a pail, and add: malt, 450 *momme*,† water, 5 *sho*.* Then, with the hands, thoroughly mix the whole, squeezing and crushing the rice until it assumes a hard, jelly-like consistence; then allow it to remain for twelve hours, during which time stir three times. If the weather is very cold, it is meanwhile covered with straw-mats; if very warm, it is kept in a cool place. Remove, and place in hempen bags, put into a strong box, and press out the liquid with strong pressure. Lastly, evaporate to a proper consistence over a slow fire.—*Sei i Kwai*, Nov., 1885.

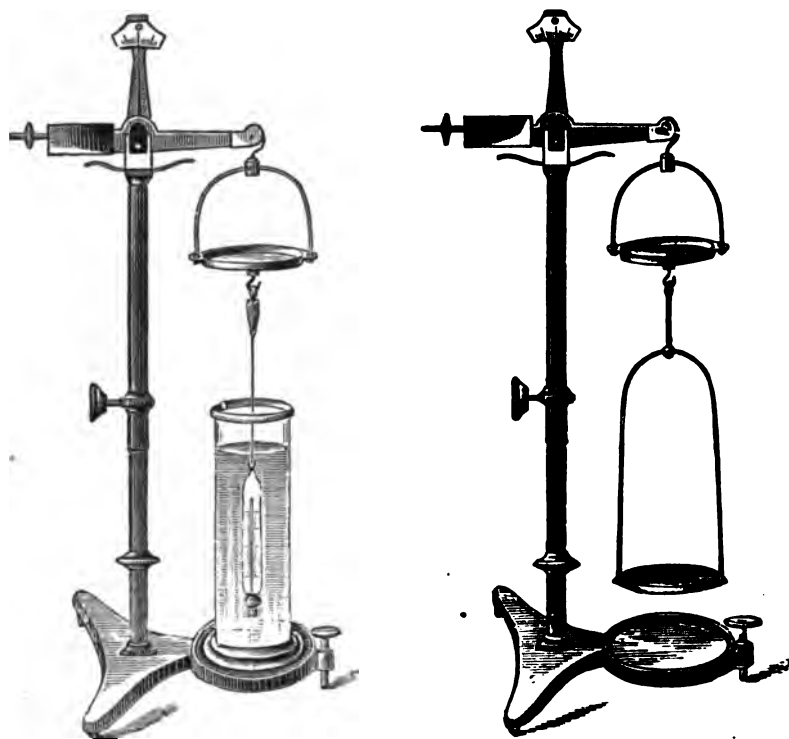
NEW SPECIFIC GRAVITY AND SUBSTITUTION BALANCE.

ON page 227 of our last volume we described an improved form of Mohr's or Westphal's specific gravity balance, and made reference to several previous articles which had appeared in our journal referring to the same subject. Having, however, learned of a still better apparatus, we have taken pains to procure one, and herewith present an illustration and description

to our readers. It is made by L. Reimann, of Berlin, who has had a large experience in the manufacture of balances and similar instruments of precision, and who designed it with a special view to eliminate the known sources of error inherent to the other forms, particularly that in which rider-weights are used, which are to be hung in notches on the beam. It has been ascertained that the last-named form of specific gravity balance frequently causes errors, either from the fact that the notches do not always correspond with absolute exactness to the weights which are supposed to be adjusted for them, or because the notches, as well as the sharp edges of the rider-weights, become blunted, or because the latter are apt to be mistaken one for another, or from other causes. The only true way of weighing is that by means of accurate weights. And in accordance with this principle, this balance has been constructed.

The several parts of the balance, all of which are kept separate in a neat box, are put together as shown in Fig. 1.

Fig. 1 represents the balance when used for specific gravity determinations; Fig. 2, when used for ordinary weighings.



Reimann's specific gravity and substitution balance.

Upon a solid iron foot is screwed a brass rod over which fits a hollow brass tube provided with a set-screw by which it may be adjusted in height. The hollow tube carries at its upper extremity the vernier and is provided with a socket for receiving the knife-edges of the scale-beam, while below the socket are situated two curved stirrups, the object of which is to prevent the scale-beam from turning too far either way. The scale-beam has on one of its arms a solid square piece of brass permanently fastened to it as a partial counterpoise for the pans, etc., to be suspended from the other side. The fine adjustment is obtained by a screw at the end of the arm. Two cylinders of glass accompany the apparatus, for which a special place is provided in the base, the level of which may be adjusted by a screw. [In Fig. 1, only the larger cylinder is shown. The smaller one is intended for taking the specific gravity of small volumes of liquids.] Two different sizes of scale-pans accompany the apparatus, as will be seen in Fig. 2.

Of these, only the upper one is used when the specific gravity of a sub-

stance is to be taken. From the bottom of the scale-pan is suspended the thermometer-float—of which there are two sizes—one of them displacing exactly 1 gramme of water at 15° C. (59° F.), while the larger one displaces 10 grammes. Each float consists of a closed glass cylinder (containing an accurate thermometer) and a fine platinum wire, to the end of which a conical piece of brass with eye is attached which is hung in the hook of the scale-pan. When either of the two thermometer-floats is suspended from the scale-pan, the index of the scale-beam is made to point exactly to the zero-mark of the vernier by adjusting the screw at the end of the scale-beam. It is to be remarked that the twisted end of the platinum wire, where it is connected with the float, must always be completely immersed in the liquid the specific gravity of which is to be taken. In order to ascertain, once for all, the exact point to which this immersion must extend, proceed as follows:

Having first adjusted the balance to the zero-point, as directed above, introduce the float into a cylinder containing distilled water at 15° C. (59° F.), as shown in the cut. Then, if the 10 gramme float has been used, put an accurate 10 gramme weight on the scale-pan, and bring the index, if necessary, to the zero-point by slightly raising or lowering the upright hollow rod supporting the scale-beam, whereby the platinum wire of the float will be more or less immersed. When perfect equilibrium has been established, note the exact point to which the wire has been immersed, and, in every subsequent determination, see that the immersion is exactly to this point. If the 1 gramme float was used, of course only 1 gramme weight is to be put on the scale-pan.

Subsequently then, when taking the specific gravity of a liquid, proceed thus: If there is enough liquid (about 1½ to 2 oz.), use the larger cylinder shown in Fig. 1, and the 10 gramme float. Allow the latter to sink to the proper mark on the platinum wire, and then place on the scale-pan the requisite amount of accurate metric weights to establish equilibrium. Supposing 8.923 grammes have thus been required; then we merely divide by 10, and obtain 0.8923, which is the specific gravity of the liquid. When using the 10 Gm. float, the specific gravity can thus be determined to 4 decimals, since the balance is sensible to 1 milligramme. On using the 1 Gm. float, dividing by 10 is not necessary, the superimposed weights directly indicating the specific gravity. Supposing it had required 0.912 Gm. to restore equilibrium, then the specific gravity of the liquid would be 0.912; but in this case it would be determined only to 3 decimals. The 1 Gm. float is intended to be used when only a small quantity of liquid, about 5 Gm., is available.

The balance may also be used for ordinary weighings of small quantities by hanging on the small scale-pan another larger one, as shown in Fig. 2.

This is exactly 11 grammes lighter than either of the floats; hence, to establish equilibrium, 11 Gm. in weights are placed on the upper scale-pan.

* 1 *to* = 10 *sho* = 1,007 cubic inches.
† 120 *momme* = 1 lb. avoirdupois.

The body or substance to be weighed is now placed on the lower pan, and enough weights removed from the upper to produce equilibrium. The amount of weights removed represents the weight of the body on the lower pan.

We have already used our balance for the determination of the specific gravities of various fluids, and find it exceedingly reliable, compact, and convenient. In our judgment, it is the best kind at present available, and, considering the great amount of labor and time bestowed on some of its parts, it is not expensive, and could be sold here, with duty and all expenses and commission, etc., added, for about 18 dollars. It may be obtained through dealers in chemical apparatus.

DROP-FUNNELS.

It is often necessary to arrange funnels in such a manner that their elongated neck dips into a liquid. At the same time it may be desirable to admit fresh liquid only in drops, but the rate of flow cannot well be either seen or controlled in the common long-necked funnels, since their bore does not permit drops to separate. This drawback is removed by employing the funnel shown here, which is designed by Dr. J. Walter. It needs no detailed explanation. The inner neck is so shaped that drops may be allowed to pass at any desired rate.

A similar arrangement is shown adjoining. This serves as a funnel for introducing acids into a gas-generating vessel. It is secured in the latter by means of a rubber cork (see the dotted lines *b*). The acid may be allowed to pass in a stream or in drops, when it will descend to the bottom of the inner tube, then rise in the space *c*, and enter the generating vessels through the lateral holes *n n*. The generated gas passes through the upper holes, *d d*, into the space *e e*, and finally finds its exit by the tube *v*.—*Zeitsch. f. Anal. Chem.*, 1885, 428.

Chinojodin.

ABOUT a year ago, we received from the "Chemische Fabrik auf Aktien (vormals E. Schering)," of Berlin, a sample of a new organic compound under the name "chinojodin." This substance was announced as one of the most prompt and energetic antiseptics so far discovered, and information regarding its chemical nature and mode of preparation was promised to be shortly published.

We have had several inquiries regarding the substance, to satisfy which we publish the following note regarding its properties, communicated by Jos. Kleiber to the *Pharm. Post*.

Chinojodin is a yellow, crystalline powder containing iodine, of a mild, aromatic odor.

Prof. Binz, of Bonn, who has first examined its properties, has made the following private [?] report in reference to it:

It is a good antiseptic.

When sprinkled upon an indolent discolored ulcer on the human skin, it causes the painless formation of an eschar, with healthy granulations.

On introducing 0.5 Gm. (ab. 8 grains) of the substance into the stomach of a cat weighing two lbs., together with a little water, the animal heat was raised, contrary to expectation, from 39° C. (102.2° F.) to 41.4° C. (106.5° F.) probably on account of a temporary gastritis that was produced. At the same time, it produced deep sleep. On the second day succeeding, however, the animal had completely recovered.

The substance resembles iodoform in its effects (but Prof. Binz does not give a conclusive opinion in this direction, since further experiments are required to prove this).

In psoriasis and herpes maculatus it produced most excellent results.

Prof. Kehrler, of Heidelberg, and Dr. M. Berthold, of Königsberg, pronounce it an excellent antiseptic in diseases of the uterus.

It has been used, so far, in the following forms:

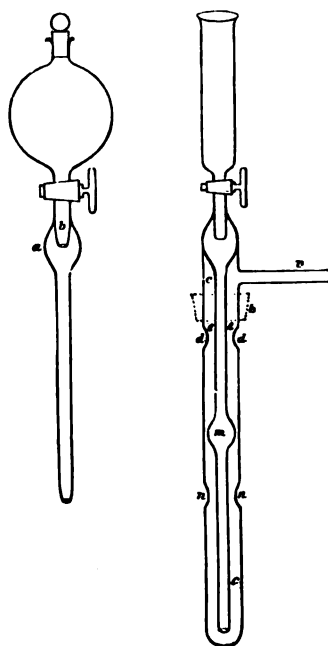
a. In fine powder, either by itself alone or mixed with talc.

b. In form of ointment, with fat or vaseline, in the proportion of 1 to 3, or 1 to 5.

c. In fine powder, suspended in colodion, which should be done at the time of use.

d. Made into a thin paste with water.

Regarding its internal application, nothing is known so far.



Walter's drop-funnels.



Goldstein's apparatus for washing liquids.

Contribution to the History of Cloves.

PROF. FLÜCKIGER has shown (*Pharmakognosie*, 2d ed., 1883, p. 762) that cloves were known in Western Europe as long ago as the VI. century, though they may not have been a common article at that time. In spite of the proof there adduced and the account of the mediæval commerce in cloves given by Heyd (*Geschichte des Levantehandels im Mittelalter*, II., 593-597) A. de Candolle appears to have overlooked these authorities altogether (in his work *Origine des Plantes cultivées*, 1883, p. 129), since he asserts that cloves were unknown in Europe previous to

the discovery of the Moluccas by the Portuguese.

If it required another proof to show that De Candolle's statement is wrong, this proof has been recently furnished. In a stone-coffin discovered on Dec. 10th, 1884, in the burial-place of the ancient Argentovaria (now Horburg, near Colmar in Elsass), and which is believed to belong to the VI. century, a small, handsome golden box was found which contained *two cloves* and a friable, amorphous, white mass. Prof. Flückiger succeeded in obtaining the contents, and identified the cloves completely. The nature of the friable mass, which had been supposed to be incense, and gave out an aromatic odor somewhat resembling storax when burned, could not be determined.*

APPARATUS FOR WASHING LIQUIDS NOT MISCIBLE WITH WATER.

WHEN a liquid not miscible with water is to be washed with water [or when an aqueous solution is to be washed out by a volatile liquid], the apparatus contrived by M. Goldstein may be used. In principle, it belongs to the same class of apparatus as that of C. Neumann, described elsewhere in this number, except that it does not work automatically like the latter, and necessitates fresh portions of liquid every time.

The arrangement of the apparatus is sufficiently intelligible from the cut. In the case of liquids which are lighter than water, the position of the tubes should be as shown in the illustration. Water enters in the direction of the arrow, and should be allowed to strike the lighter liquid in the bottle with some force, so as to stir it up. When enough water has been added, it may be withdrawn through the siphon tube, by attaching a piece of rubber hose to the outer limb.

If liquids heavier than water are to be washed, the tube through which the water is admitted must reach nearly to the bottom of the bottle, while the other tube must be raised into the upper layer.

[NOTE OF ED. AM. DRUGG.—The suggestion to use the apparatus for washing watery solutions with volatile liquids—the very reverse of that for which the apparatus was originally constructed—comes from us. In this case, the volatile liquid, if lighter than water, must be made to enter at the bottom of the aqueous solution; and, if heavier than water, on top. The siphon tube is to be adjusted so as to withdraw the volatile menstruum used for washing.]

Vaseline in Confectionery.—The French Government has issued strict orders prohibiting the use of vaseline or other petroleum ointments as an admixture to confectionery. It appears this has become quite customary, the object being to prevent certain articles from becoming rancid too soon. The government takes the ground that the admixture may merely hide the fact that rancidity has already set in; and that mineral fats do not belong among the substances that have a nutritive power.—*After Arch. de Pharm.*, 1886, 14.

Dr. Pierce's Favorite Prescription.

ACCORDING to Hager this contains: Savin, 10 grammes; agaric, 5 grammes; cinnamon, 5 grammes; Peruvian bark, 10 grammes. Make a decoction of 200 grammes, and add: Gum arabic, 10 grammes; sugar, 5 grammes; tinct. digitalis, 2 grammes; tinct. opii, 2 grammes; oil anise, 8 gtt. Dissolve the gum, sugar, and oil in 45 grammes of alcohol.

* After reprint from *Journ. de Ph. d'Als. Lorr.*, 1885, received from Prof. Flueckiger.

CENTRIFUGAL STRAINERS.

THE principle of the centrifugal dryer has lately been again recommended and utilized for operations on the small scale in the chemical and pharmaceutical laboratory. Some of its applications are here described and illustrated.

1. *For Making Infusions or Decoctions.*—For this purpose, the centrifugal strainer devised by Bombelon (of Neuenahr) may be employed.

S is a circular sieve, resting upon an easily-turning axis F, around the lower portion of which a coil of catgut is wound, one end of which is fastened to the axis, while the other passes through a slit in the lower case, and is attached to the handle Z. A is a tinned-iron mantle surrounding the sieve, and serves to catch the ejected fluid which runs off, through the spout B, into a graduate or other vessel placed below. On pulling the handle Z, the axis bearing the sieve is put in a rotary motion, which becomes reversed by every pull at the handle. A special mechanism, not shown in the cut, winds the catgut or cord upon the axis, when the apparatus is at rest. If a decoction or infusion is to be strained, it is simply poured into the sieve, and, by pulling the handle Z eight or ten times, all the available liquid will have been forced out. This method has a special advantage in the case of drugs rich in pectin or mucilage, as these inert constituents are not pressed out with the liquid. If complete exhaustion is desired, this may be accomplished by remoistening the drug once or more frequently, if necessary, and repeating the operation.

2. *For Separating Filtrates in Chemical Analysis.*—The following apparatus is described by Alexander Watt, in the *Chemical News* of Nov. 6th, 1885.

The late Dr. Mohr, of Bonn, advocated the use of a centrifugal machine as a means of rapidly drying crystals and crystalline precipitates; but, although they are admirably adapted for that purpose, centrifugal machines are seldom seen in our chemical laboratories.

The neglect of this valuable addition to our laboratory apparatus it probably owing to the inconvenience involved in driving the machine at a high speed by means of the ordinary hand-driving gear, especially when the rotation has to be maintained for a considerable length of time.

It occurred to me, therefore, that, by attaching the drum or basket of the machine (or the rotating table of Mohr's apparatus) directly to the spindle of an electro-motor, the difficulty of driving might be got over, and at the same time a combination of great efficiency would result, as the electro-motor, like the centrifugal machine, is most efficient when run at a high speed.

The apparatus shown in the sketch consists essentially of a perforated basket, A, which is slipped on to a cone attached to the spindle S of an electro-motor, and held in position by the nut D. The casing B, with its removable cover C, serves to receive the liquid driven out of the substance being dried. A flat form of the ordinary Siemens H armature E revolves between the poles P of the electro-magnets M, which are connected by means of the base plate I. The brass cross-bar G carries the top-bearing of the spindle S, and prevents the magnet poles from being drawn together.

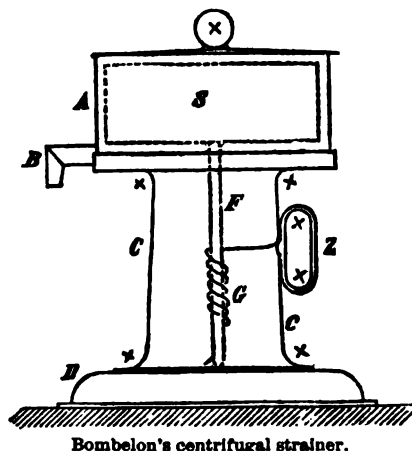
From four to six cells of a bichromate battery, or Faure secondary battery, furnish sufficient power to run the machine at a high speed. An apparatus, with a copper basket four inches in diameter, has been found extremely useful in the laboratory for drying

such substances as granulated sulphate of copper, and sulphate of iron and ammonia, but more especially for drying sugar, which, when crystallized in very small crystals, cannot be readily separated from the syrupy mother-liquor by any of the usual laboratory appliances.

For drying substances which act on copper, the basket may be made of platinum or ebonite; in the latter case, owing to the increased size of the perforations, it may be necessary to line the basket with platinum wire gauze or perforated parchment paper.

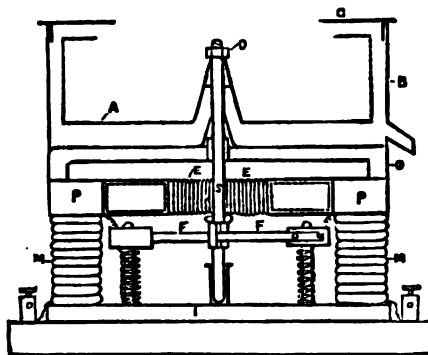
Reddening of Carbolic Acid.

THE old question how carbolic acid acquires a red color has again been examined, this time by Mr. A. Kremel, of Vienna, who has ascertained that it is produced by contact of the carbolic acid with many metals and me-



Bombelon's centrifugal strainer.

tallic oxides, in presence or in absence of ammonia, and that in all cases there appears to be formed one and the same organic body, which seems to be combined with the metal in question, and which is soluble in carbolic acid with red color, and in sulphuric acid with blue color.



Watt's centrifugal strainer.

The author employed for his experiments pure phenol, which had remained colorless while in his possession for about two years. Portions of 25 Gm., each contained in flasks were brought in contact with the following metals in form of powder: silver, lead, copper, iron, tin, and zinc. The flasks were closed and exposed to a temperature of about 122° F. The contents of the flask containing copper turned red first; next followed those containing lead, silver, and zinc, and after three or four days these were all purple-red. The samples containing iron and tin, however, remained colorless. Another series of experiments was next made, in which 5 drops of water of ammonia were added to each flask. The result was that an intense red color appeared in the samples containing copper, lead, silver, zinc, and iron, which color appeared in the former metals much more rapidly than in absence of am-

monia. The sample containing tin remained even now colorless. In a new series of experiments, the oxides corresponding to the above metals were added without ammonia (except in the case of oxide of silver, when this was added). It required only a few hours to produce reddening, except with oxide of tin which had no effect. With oxide of lead, the color was lightest.

Every sample that had thus been reddened, was subsequently filtered to separate the metals or metallic oxides, and the filtrate dissolved in water. In every case, a dark-red precipitate was produced. After again filtering, the new filtrates were rose-red, except the three samples treated with lead which were colorless. Upon the addition of ammonia, the filtrate from the sample treated with copper acquired a handsome blue color. But in no case could the corresponding metals be identified in the filtrates, even when the most careful search was made. On incinerating the filters, however, together with their contents, the presence of the several metals could be detected, excepting silver, which could not be found in the corresponding ash.

Every one of these precipitates was also perfectly soluble, with a red color, in carbolic acid, and partly also in ether and alcohol. The residue left after the evaporation of an alcoholic solution was, in every case, soluble in concentrated sulphuric acid with an intense blue color.

The author concludes his paper by stating that carbolic acid solution prepared from a reddened acid should always be filtered. He also recommends that colorless acid should be kept in glass free from lead, or in heavily tinned iron vessels, soldered with pure tin.—After *Pharm. Post*, 1886, No. 1.

The French Process of Making Crystallized Fruits.

U. S. CONSUL FRANK H. MASON, of Marseilles, sends the following report to the State Department.

The fruit is first carefully assorted in respect to size and uniform degrees of ripeness.

Pears, pineapples, and quinces are pared, citrons are cut into quarters and soaked a month in sea-water, and the "pits" of apricots, cherries, and peaches are carefully removed.

Even this preparatory process requires a certain degree of skill, since the stone must be removed with as little injury as possible to the form and solidity of the fruit. This work is done mainly by women, who earn thereby fifty cents per day.

Thus prepared, the fruit is immersed in boiling water, which quickly penetrates the pulp, dissolving and diluting the juice, which is thereby nearly eliminated, when the fruit is subsequently taken from the water and drained, leaving only the solid portion of the pulp intact.

This process of "blanching" must also be done with exact nicety, the period of immersion in the hot water being determined by the size and ripeness of the fruit. If immersed too long, the pulp is either overcooked or is left too dry and woody. If taken out too soon, the juices left in the pulp prevent perfect absorption of the sugar afterwards, and, by eventually causing fermentation, destroy the value of the product. In this, as in other stages of the process, the only guide is experience. A skilful workman can tell by the color and appearance of the pulp when it is properly "blanched," and this knowledge invariably commands employment and liberal compensation.

After being thus scalded, some fruits, apricots, for example, are again assorted into two or three classes, according

to the degree of softness that has been produced, for the reason that if kept together they would take up the sugar differently, some losing their form entirely, while others would remain sufficiently impregnated. For these different grades sugar-syrups of different degrees of density are required, the softer the fruit the stronger the syrup required for its preservation.

For the same reason each of the different varieties of fruit requires a syrup of corresponding strength.

Pears, citrons, and pine-apples, which remain hard and firm, take best a syrup having a density of from 18° to 25°, while apricots, plums, and figs are treated with syrups which gauge from 30° to 42° by the areometer.

The requisite syrup having been prepared by dissolving the sugar in pure water, the fruit is immersed in it and left at rest for a certain period in large earthenware pans, glazed inside, and having a capacity of about eight gallons.

The syrup penetrates the pulp, and gradually withdraws and replaces the remaining fruity juice, which, as it exudes and mingles with the transparent liquid, produces a certain filmy or clouded appearance, which marks the commencement of fermentation. When this has reached a certain stage, the vessel containing the syrup and fruit is placed over the fire and heated to 212° F. This corrects the fermentation and raises all impurities to the surface, whence, if necessary, they can be removed by skimming. If the syrup is of proper density, this process of impregnating the fruit with sugar will be complete in about six weeks, during which time it is usually necessary to perform this heating process, as above described, three times.

The impregnation of the fruit with sugar being thus complete, it is taken out, washed in pure water to remove the flaky particles that adhere, and is then submitted to one or two finishing processes, as follows:

If the fruit is to be "glacé," that is, covered with an ice or transparent coating, it is dipped in a thick, viscid syrup of sugar and left to dry and harden rapidly in the open air. If it is to be "crystallized" it is dipped into the same syrup, but is then cooled and dried slowly in a kiln or chamber warmed to a temperature of 90° Fahrenheit.

This slow cooling causes the thick syrup with which the fruit is covered to crystallize and assume the usual granulated appearance. The work is now finished. If properly done, the fruit thus preserved will bear transportation to any climate and will keep, firm and unchanged, for years. It is packed in light wooden or card-board boxes and may be shipped in cases containing several hundred pounds each.

Purification of Arsenical Zinc.

In order to prepare metallic zinc free from arsenic, for use in analytical operations, it is customary to heat it with nitrate of potassium. This treatment, however, though effective, is quite tedious, and furnishes a metal which is but slowly attacked by acid, though this drawback may be removed by repeatedly granulating it.

Another process has recently been described in the *Chem. Centralblatt*, which is as follows.

Melt the zinc and add to it 1 or 1½ per cent of anhydrous chloride of magnesium. On stirring, white vapors of chloride of zinc are given off, and carry the arsenic along with them. The metal is then poured into cold water and yields granulations which are easily attacked by sulphuric acid and entirely free from arsenic. The same method is said to answer for the purpose of removing antimony from zinc.

To Cut Thick Glass-Tubes.

A SIMPLE method of cutting thick glass-tubes, even of large diameter, is published in *La Nature*.

Wind an iron wire of half a millimeter in thickness around the glass-tube, and connect it with a galvanic battery of sufficient power to raise the wire to a red heat. Then put a few drops of water near the wire upon the glass. The latter will then crack in the direction of the wire, and the thicker the glass, the more exact will be the fracture.—*Zeitsch. f. anal. Chem.*

A Simple Method of Arranging Several Liquids of Different Density in Layers.

THOUGH the method below given is not new, it will, nevertheless, be a useful hint to some of our readers. It is given by A. Handl in the *Zeitschr. f. Anal. Chem.*

The specifically heavier liquid is made to pass to the bottom of the lighter liquid by means of a siphon drawn out to a fine point, and the flow of which can be controlled by means of a pinch-cock attached to a rubber-tube forming part of the inner leg of the siphon. By very carefully regulating the pinch-cock, the heavier liquid may be allowed to flow out under the lighter, lifting the latter without mingling with it.

The Therapeutic Action of Nitrite of Sodium.

SODIUM nitrite, whose therapeutic importance we have already several times referred to, has been employed by Dr. Ludwig Schweinburg (*Centralblatt für die gesammte Therapie*, Aug., 1885) with success in moderately severe cases of angina pectoris. He has also employed with favorable results in a case of hysteric asthma, and in one of dyspeptic asthma. It proved useless in one case of cardialgia depending upon an insufficient aortic valve, and in two cases of intercostal neuralgia. In one of trigeminal neuralgia it produced marked improvement. The method of employment was to dissolve ½ gramme (7½ grains) of sodium nitrite in 150 grammes (6½ ounces) of water, of which three to four tablespoonfuls could be taken daily.—*Therap. Gazette*.

To Render Corks Ether-Tight.

C. NEUMANN has recently. (*Ber. D. Chem. G.*, 1885, 3, 061) pointed out that corks may be rendered ether-tight by chrome-gelatin. It is well known that ordinary corks very soon become porous to the vapors of ether, benzol, and other volatile liquids [which gradually carry off every trace of moisture]. By coating the corks with a solution prepared from 4 parts of gelatin, 52 parts of boiling water, and 1 part of ammonium dichromate (added to the filtered gelatin solution), and then exposing them for a few days to sun-light, absolutely tight stoppers will be obtained. The apparatus may be put together with unprepared, sound corks, and the exposed portions of the latter afterwards coated and exposed to sun-light. It is well known that gelatin, in presence of bichromates, is also rendered insoluble in water by exposure to light.

[NOTE OF ED. AM. DRUGG.—We have used a hot mixture of gelatin, water, and tannin, as well as chrome-gelatin, for several years past, for the purpose of sealing bottles containing chloroform and other volatile liquids, with good success.]

The Estimation of Sulphurous Acid, Free or Combined.

IN the estimation or assay of sulphurous acid by means of volumetric solution of iodine, it is necessary to dilute the former—whether the solution of the acid or that of a sulphite—so that

it shall not contain more than 0.05 per cent of SO₂. In order to obtain accurate results, it has been found that water previously deprived of air should be used for dilution. [In the process of assay of Acidum Sulphurosum given in the U. S. Pharm., common water is ordered as diluent, as the assay is not required to be absolutely exact.] In order to avoid this tedious operation, W. B. Giles and A. Shearer recommend the following method.

Weigh the substance, if a solid, upon a small watch-glass, and immerse the latter in an excess of normal $\frac{1}{10}$ volumetric solution of iodine. Stir well, and in the case of difficultly soluble sulphites wait some time to give the iodine a chance to decompose the substance; then determine the excess of iodine with $\frac{1}{10}$ volumetric solution of hyposulphite. Liquids are weighed in a small tube closed by fusion, which is afterwards broken under the iodine solution.—*Journ. Soc. Ch. Ind.*, and *Z. anal. Chem.*

The Analysis of Extract of Beef and Beef Tea.

IN a paper on this subject, published in *The Analyst* (1885, Dec.), Dr. Otto Hehner gives a process which he considers more convenient than others heretofore proposed. He says:

"I have lately had, on several occasions, to examine specimens of beef tea, with a view to decide whether they were made from meat alone or unduly charged with gelatinous substances, and in order to be able to arrive at the desired result, I have made a number of analyses of well-known preparations, which, partial though they be, may be of some utility to other analysts. I do not pretend to say one word about the much-debated question of the dietetic value of these preparations; the fact that they are largely consumed by invalids and form an important branch of industry will, I trust, be taken as sufficient justification for the publication of my figures. I deviated from the ordinary course of examination in but one particular. For the estimation of the "matters precipitable by alcohol," I dissolved 2 grammes of the substance in 25 C.c. of water, and added 50 C.c. of strong methylated spirit, allowed the precipitate to settle over night, poured and drained off the clear liquor next morning, and, without washing, dissolved it in a little hot water, evaporated in a weighed vessel, and dried at 100°. I held this way of proceeding to be more convenient than the extraction with 80% alcohol, as usually practised with extracts of meat. In an experiment with Nelson's gelatin, dried at 100°, I found that thus no less than 93.19% were precipitated, whilst the Liebig Company's Meat Extract gave but a faint precipitate, amounting to 5.1%, my aim being to precipitate as much as possible of the gelatin and as little as possible of meat extractives and mineral salts. The phosphoric acid was determined by the process described by me some years ago, the phospho-molybdate precipitate being dissolved in ammonia, and the solution evaporated, dried at 100°, and the residue divided at 28.5.

Liebig's Extract.

Moisture (at 100°).....	18.70
Nitrogen*.....	7.94
Alcohol precipitate.....	5.16
Ash.....	23.38
Phosphoric Acid.....	6.07

And the dry material of Liebig's Extract contained:

Nitrogen*.....	9.7
Alcohol precipitate.....	6.8
Ash.....	28.7
Phosphoric Acid.....	7.4
Phosphoric Acid in the Ash.....	25.9

*Dr. Hehner does not give the amount of dry, organic, nitrogenous constituents direct, but only the nitrogen obtained therefrom.

APPARATUS FOR CONTINUOUS EXTRACTION OF SOLUTIONS.

ONLY one form of apparatus has so far been proposed for the continuous extraction of liquids or solutions by means of volatile solvents. This was designed by H. Schwarz and described in the *Berliner Berichte*, 1884, 369. It has the disadvantage, however, of being very fragile. G. Neumann has now constructed an improved apparatus, the utility of which will at once be appreciated by those who have much occasion to shake alkaloids or other proximate principals out of aqueous solutions by ether or other volatile solvents.

The flask *B* (Fig. 1) containing the appropriate solvent (for instance, ether) is placed into a water-bath of constant level, heated by steam (through *a*). The ether vapor passes through the tube *c*, reaching to near the bottom of the cylinder *D*, into the solution to be extracted. The ethereal solution or extract collects on top of the latter and any vapor of ether that may attempt to escape is condensed by the upright condenser *E*. As soon as the ethereal solution has reached the highest point of the glass tube *f*, the latter acts as a siphon and transfers most of the ethereal solutions into the flask whence the solvent is again volatilized as before. The separating funnel *g* serves for adding a new portion of liquid to be extracted. And the exhausted solution may be drawn off through the stop-cock *h*.

Sometimes it is desirable to extract a liquid with hot ether or other volatile liquid. In this case a second form of apparatus designed by the same author may be used.

The flask *B* (Fig. 2) is heated as in the former case. The ether vapor enters the wide cylinder *C*, passes up the tube *d*, is condensed in the condenser *E*, and any vapor still remaining is finally condensed in *F*. The condensed ether collects in the tube *g*, until its height is such that by its own weight it is pressed through the column of the liquid to be extracted, filling its lower end.

The ethereal solution collects on the surface of the latter in *H*, and when it attains the height of the tubulure it flows off through the tube *i* into the flask. The hot ether-vapor surrounds the inner cylinder containing the liquid to be extracted, and heats the latter sufficiently to render its constituents more soluble in the ether. The exhausted solution may be drawn off through the siphon *k*, and new liquid is best introduced through the condenser *F*.—*Ber. d. Deutsch. Chem. Ges.*, 1885, 3, 061.

Adulterated Chlorate of Potassium.

DR. F. DRONKE reports having recently found some chlorate of potassium contaminated with the sodium salt. The external appearance, crystalline form, and usual reactions were apparently normal and did not excite any suspicion. On the other hand, it was noticed that the salt imparted a deep yellow color to the flame, and was soluble in about 8 parts of water. A saturated solution in water, when mixed with one of acetate of potassium, at once produced a characteristic precipitate of chlorate of potassium. *Chem. Zeit.*

How Balances may be Affected by Errors.

ASIDE from ordinary causes, familiar to every person who has handled good balances frequently, and which affect their accuracy, there arise occasionally some sources of error, which are not suspected until the aberration of the balance is noticed. We will not speak here of such conditions, as, for instance, if one scale-pan, or one side of the beam is illuminated by sun-light, while the other is in the shade; or if a gas light or other source of heat is situated near one side of the balance, or when the operator allows his breath to waft over one side of the balance, etc., etc. In the *Zeitsch. f. Instrumentenkunde* (5; 161) R. Henning mentions one source of error which we have ourselves studied years ago, and which is not as generally known as it ought to be, namely the electrification of the glass-case by friction, and the consequent attraction of one of the scale-pans. As an instance, this author mentions the fact that a balance of 1,000 Gm. capacity, after one side of its case had been rubbed with a linen rag, showed

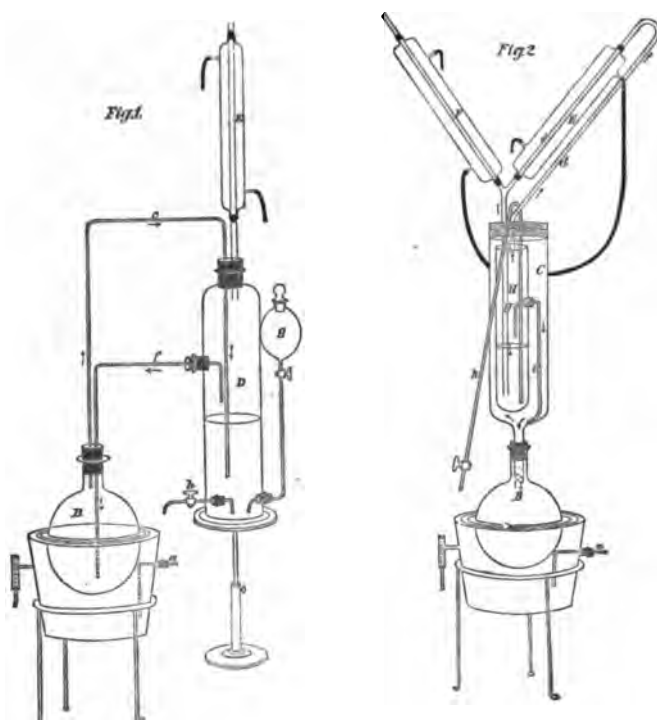
eliminated by placing the beaker beside the scale-pan, immediately after weighing, and then determining the zero-point of the scale, while the beaker is still present and the current is still arising.

Auer's Incandescent Light.

It is announced Dr. Auer Ritter von Welsbach, at present one of the assistants of Prof. Lieben of the University of Vienna, has invented a new system of illumination which bids fair to revolutionize the present wasteful methods.

The principle of the new method consists in this, that a certain solid body is made brightly luminous by being heated in the blue flame of a Bunsen burner modified for this purpose. The intensity of light produced is said to rival the Drummond light. For the present, the composition or construction of the solid body is a secret of the inventor. Dr. Heger, editor of the *Pharm. Post*, from which paper we take this notice, states that it consists of a mantle, probably charged with some gauze which is

saturated with certain fixed oxides or salts, among them perhaps those of certain of the rarer earths, in the exploration of which the inventor is an authority. [In fact, it was he that recently discovered the fact that the supposed element didymium was a compound of two other elements, which he termed praseodym and neodum.] These oxides or salts are probably first ignited in the gauze, and thus acquire the property of glowing with a white "heat" or light. A prepared "mantle" of this description is said to cost only about one kreutzer (less than one cent), and to last one thousand hours, until it becomes so incrustated with dust that it loses its luminosity. The consumption of gas to keep the "mantle" ignited, is said to be only one-half of that required for an ordinary gas flame, and the light produced is said to equal, in intensity and color, the electric light. Dr. Auer has transferred his patent rights for all countries, except Austria and England, to an English company.



Neumann's continuous extraction apparatus.

an increase of weight on this side of 600 milligrammes; after friction with a silken rag it showed an increase of 250 Gm., and with a woollen rag, an increase of 70 Gm. Even very gentle friction, such, for instance, as was produced by a gentle sliding to and fro of the box of weights upon the cover of the case, altered the zero-point of the scale by 0.2 to 0.6 degrees. The effect of the electric charge lasts but a short time, but is so much the more annoying as its true effect or value cannot be ascertained and deducted afterwards. As a protection against this error, the author recommends to place permanently under the upper part of the case a properly arranged grating of thin strips of tin-foil, which will at once absorb and neutralize any electric currents.

The same author also draws attention to some other well-known sources of error. One of them arises from placing upon one scale-pan a beaker or other vessel containing an evaporating liquid which causes a current of air and moisture to rise. An additional source of error is the presence in the balance or balance case of a substance able to absorb the vapor, such as chloride of calcium, placed there for absorbing moisture. This error is best

A Monument to Prof. Landerer.—It is proposed to erect a monument in Athens in commemoration of the late Professor Landerer, whose death we recorded some time ago, and who was an occasional contributor to this journal. A portrait of the doctor will be placed in the University building.

A Chemical Exhibition in Paris.—The Paris Chemical Society announces an exhibition of chemicals and chemical apparatus, both industrial and scientific, which is to be held under its auspices during the coming Easter week, at the conservatory of the Arts et Métiers. Foreign chemists, and more especially the English, are invited to participate, as exhibitors as well as visitors. During the exhibition a series of lectures will be delivered by Prof. Raoult, of Grenoble, with the aid of the unrivalled appliances and personnel of the Conservatory. Further particulars may be obtained from Prof. Oechsner de Coninck, 121 rue de Reimes, Paris. The genial professor is a son-in-law of the late Prof. Wurtz. *Chem. and Drugg.*

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EDITORIAL.

THE practice of coloring pharmaceutical preparations, in general, does not by any means deserve to be condemned without exception, as is done by some theorists. On reflection, it will be found that there are several classes of preparations, in each of which the addition of coloring matter is practised for some good reason, while there are, of course, others in which no good reason can be shown. Let us review these classes briefly.

There are a number of preparations which are very properly or wisely colored for safety, so as to distinguish them from others by the eye. Take, for instance, Fowler's Solution. If it had been deemed sufficient to flavor it, the simple spirit of lavender might have been used, but then only one of our senses would have been appealed to. In taking the compound spirit, the eye has also been enlisted in identifying the preparation, and, in view of the powerful nature of the preparation, the object of the coloring is certainly a laudable one. Various other instances might be adduced, but one sample will suffice.

In the preceding case we mentioned the simple and the compound spirit of lavender. These two preparations would, if both were uncolored, be so much alike in appearance and even odor, that they would often be confounded. The presence of the coloring matter of red saunders, however, in the compound spirit, is a sufficient aid to distinguish them. We have here the motive of convenience. To this class belongs a large number of other

preparations, in many of which it is doubtful whether the coloring matter was originally added by design or merely from accident, the ingredient yielding the color having, perhaps, been added for an entirely other purpose.

Finally, there is a class of preparations—larger perhaps than any of the others—in which the coloring matter is added for the purpose of deception. There are just as many degrees or grades of fraud in this class as there are in mercantile transactions in general. It is the object of a merchant to buy his goods at as low a price as possible and to sell them as high as he can. In order to accomplish this, he may represent his goods as better than they probably are [how many merchants do not?], and even may not hesitate to improve their appearance by various tricks and devices. Many of these are considered quite legitimate and permissible, while others must be characterized as dishonest and fraudulent practices.

It is true, most of the instances in which pharmaceutical preparations are colored for the purpose of deception belong to the more innocent class, there being no harm intended or done. What else could have been the intention of adding coloring matter to a weak solution of the cinchona alkaloids in colorless simple elixir, but to make the resulting mixture appear as if it had been made from the natural bark, containing some of the coloring matter of the latter? There is no need of extending this subject any further, as the reader may, without difficulty, recall instances of this kind in every branch of business.

IN our last issue we gave an account of some experiments made by Dr. Thomas J. Mays, of Philadelphia, with theine, the results of which led him to conclude that theine differed decidedly, in its physiological or therapeutic action, from caffeine. As he himself reports, he used Merck's theine, and he therefore naturally assumed that this alkaloid was actually made from tea, while caffeine was made from coffee. Now it is not at all surprising that any one should entertain such an opinion; in fact, it is not likely that any one, not specially posted on the subject, should know that commercial caffeine and theine are identical. The notion of their being prepared from tea and coffee respectively, and therefore being two separate products, is apparently strengthened by the fact that the price-lists of our own manufacturers (such as Powers & Weightman; Rosengarten & Sons, etc., etc.) quote both caffeine and theine as separate articles—though it ought to strike one at once as curious that both are always quoted at the same price.

We have reason to believe that neither theine or caffeine is manufactured in this country, but that all that is sold is imported from abroad.

Now on looking over the price-lists of all prominent manufacturers of

alkaloids and other chemicals on the continent, such as Trommsdorff, Schuchart, Gehe & Co., Kahlbaum, E. Schering, etc., we either find no mention of theine at all, or we find (as in Schuchart's price-list) the remark "Thein vide Caffein."

From the "*Handelsbericht* von Gehe & Co., September 1886," page 34, we translate the following passage:

"Although caffeine is in fair demand, and still remains at its comparatively low figure, an advance is to be expected because the proper crude material for its preparation, namely the cheaper grades of tea, have been for some time unobtainable, and the better ones are too expensive to be available for the manufacture at the present low prices of caffeine."

From this it appears that cheap tea-leaves are the principal source of caffeine, and therefore also of theine.

We are, moreover, assured by the house of E. Merck, of Darmstadt, that in view of the heretofore acknowledged and undoubted identity of caffeine and theine, manufacturers consider themselves at liberty to choose whichever crude material happens to be cheapest in the market. A lot of coffee damaged by water or otherwise would probably sometimes form a cheaper source than tea-leaves. Usually, however, the latter are used as source.

Now the question might be raised, why do the manufacturers contribute towards the perpetuation of the erroneous belief that caffeine and theine are separate products, by putting out one and the same substance under two different labels. To this question we have no authentic answer supplied to us by the manufacturers, but previous experience has taught us the correct answer. It is simply this. Certain positive facts often require a long time to become universally known and recognized. What an old practitioner has once learned to use in his young days, he generally continues to use up to his old age, and few of them care about reading up on remedies they have used for a long time and think they knew all about. Whatever, then, may be the advance made in chemical knowledge, manufacturers will often receive orders for articles that are obsolete, or which have acquired new and more correct names. If a manufacturer in Europe, therefore, receives an order for, say theine, from abroad, he may not consider it his business to first start a tedious correspondence trying to convince his customer that he ought to call for "caffeine," as this is the recognized chemical term for the alkaloid. He simply puts up the article and labels it theine. Indeed, properly speaking, it is nearly always theine what he supplies. But by common consent, theine is now dropped in chemical language. And in consequence of this perpetuation of obsolete names, many other persons are innocently led into error, who would undoubtedly have known how to avoid it had they not supposed that the name of a world-renowned firm, on the label of one of their products, is

sufficient guaranty for its genuineness.

Now caffeine or theine is not only obtainable from coffee or from tea-leaves, but also from guarana, as well as from maté (*Ilex paraguayensis*) and from Kola nuts. Compare *Husemann's Pflanzenstoffe*, 2d ed., 1370, etc. *Neues Handwörterbuch der Chemie* v. Fehling, vol. III., 339.

Guaranine is, of course, a mere synonym of caffeine and is not, as such, quoted in the price-lists of manufacturers. We do not believe that any of them have used guarana as a starting-point, since it has been shown by Martins (in 1840) that guaranine is identical with caffeine. If, therefore, any manufacturer should receive an order for "guaranine," he will most likely put up caffeine and put a "guaranine" label on.

Finally we might ask, is it honest on the part of the manufacturers to play such tricks with labels? Strictly speaking, it is not, as will be conceded by everybody, though there are plausible arguments to be brought forward in favor of their defense.

Manufacturers and dealers can do a great deal of damage with labels by perpetuating obsolete and erroneous information, for the labels on the bottles and packages are probably the first thing the young pharmacist or the medical student will try and impress on his memory. And any false titles, misspelled names and other misleading information thus acquired are among the most difficult things to eradicate from his memory afterwards.

ON the 15th of February a bill was introduced in Congress which proposed the changes in the tariff. The following are some of the items relating to chemicals and drugs.

	Present rate.	Proposed rate
Acids—Acetic, acetous, etc., per lb.....	\$0.10	\$0.08
Castor beans, bush.....	.50	.40
Castor oil, gallon.....	.80	.60
Iodine, resublimed, lb.....	.40	.30
Licorice paste or roll, lb ...	.07½	.06
Strychnine, ounce.....	.50	.40
Refined borax, lb.....	.05	.03
Pure boracic acid, lb.....	.05	.03
Commercial boracic acid, lb.	.04	.03
Whiting and Paris white, dry, lb.....	.00½	.00½
Acetate of lead, brown, lb...	.04	.03
Acetate of lead, white, lb...	.06	.04
White lead, dry, lb.....	.08	.02½
White lead, ground or mixed lb.....	.08	.02½
Litharge, lb.....	.08	.02½
Orange, mineral and red lead, lb.....	.08	.02½
Nitrate of lead, lb.....	.03	.02½
Saltpetre, refined, lb.....	.01½	.01
Soda, bicarbonate and sale-ratus, lb.....	.01½	.01
Ochre and ochre earths, ground in oil, lb.....	.01½	.01
Earth or clays, wrought, not otherwise provided for, ton.....	3.00	2.00
Kaolin, ton.....	3.00	2.00
Acid, tannic and tannin, lb..	1.00	.50
Santonine, lb.....	3.00	2.00
Medicinal preparations, lb...	.50	.40

The *New York Daily Tribune*, commenting upon the "Morrison Tariff Bill" as it is called, stated that the aggregate of duties collected in 1885 upon this class of articles was only \$602,326, and the value of such articles imported was only \$2,669,353. Upon some of them the rate of duty was

quite high, as on umber and umber earths, 70.44 per cent; on chicory root, 57.68 per cent; on ochre and ochre earth, 58.28 per cent; on substitutes for coffee, 37.14 per cent, and on barytes manufactured, 41.70 per cent. The duties on other articles in this class were generally low, and yet the imports were small. But of glycerin 5,899,511 pounds were imported last year, valued at \$317,775, and the duty collected was \$117,990, or 37.13 per cent. Of crude nitrate of potash the imports amounted to 11,753,940 pounds valued at \$341,222, and the duty collected was \$117,539, or 34.45 per cent. The importation of many of these articles would affect very seriously branches of industry which have been established in this country, but it is difficult to determine what number of persons are engaged in such industries.

THE attention of our readers is called to the vehicle for disguising the taste of quinine recommended by Mr. J. D. AUG. HARTZ, of College Point, in a paper printed in this number. The preparation is not only a good vehicle for quinine, but also for many other disagreeably-tasting drugs, and deserves a thorough trial.

IN the formulæ of emulsions communicated on page 36 of our February number, by Mr. E. A. Ranson, two evident errors have been made by the compositor which have been overlooked in reading the proofs. In formula 1 (Emulsion with Hypophosphite of Lime), the quantity of oil of bitter almonds should be 1½ fl. drachms instead of 1½ fl. 3. And on the third column of same page, in formula No. 3 (Pancreatized Cod-Liver Oil), the quantity of oil of bitter almonds should be 2 fl. drachms instead of 2 fl. 3. We are indebted to Mr. R. C. Davis for first drawing our attention to the wrong figures.

A LAW-SUIT was decided last May by the Court of Appeal of Montpellier, by which the doctrine was once more reaffirmed that a pharmacist is not a trader (*commerçant*). The judge said that "the profession of pharmacist practised by X., the defendant, cannot establish a presumption of his having acted as a *commerçant* in the case at issue, for the pharmacist is not a trader, since he owes the remuneration received much more to the science acquired through studies enforced by law, than to the value, often insignificant, of the substances employed in preparing the remedies dispensed to the public.—*Chemist and Druggist*."

THE average physician will frown upon and talk down all patent bitters, kidney and liver cures, cough syrups, and like nostrums, denouncing them as frauds and swindles, and if a druggist ventures to prepare any of these things himself, and put them on the market, he is looked upon and spoken of as no better than a rascal and a roofer. Yet this same doctor will complacently write a R for celerina, iodia, aletris cordial, bromidia, acid man-nate, Fellow's syrup, Wheeler's elixir, oleo-chyle, papine, hydroleine, listerine, phosphopeptine, or any other of the many nostrums that are prepared for and advertised to the medical profession only, and of the composition of which he knows absolutely nothing. "O consistency, thou art a jewel," not found in the diadem of the average physician.—*Indiana Pharmacist*.

A WRITER in the *Bibliotheca Sacra* for October, 1885, says (authority not mentioned) that \$125,000,000 were spent for opium in China during 1884; that over fifty millions of people are computed to be using this drug, and that the mortality was not less than 600,000 a year (probably from all causes of disease). Seven thousand tons of opium were sent during the year from India to China.

"T. C. M." (*Cincinnati Lancet-Clinic*) says: "Medicines were first given in capsules in 1838. The first capsules made were gelatin-coated and contained copaiba and cubeba. . . The double-jointed tube capsule ordinarily in use was the invention of Lehuby, on which there is no American patent. Racquin's capsules are prepared from gluten."

A WRITER in the *British Medical Journal* says that a pineapple should never be sliced with the knife used to peel it without cleaning the blade, as the rind contains an acrid substance which causes soreness of the mouth and lips. Salt is used in the West Indies as a local antidote to the poison.

THE Sultan of Turkey is said to pay two German apothecaries \$5,000 a year each, with board and rooms in the palace, and the services of several attendants.—*Nat. Drugg.*

MR. GEO. H. KALTENER, of San Antonio, President of the Texas Pharmaceutical Association, writes us that the next annual meeting will be held at Dallas on the 27th of April, and for the three days following. Mr. G. A. Eisenlohr is the Local Secretary, and will render any service which will enable manufacturers of pharmaceutical wares to make an exhibit. The State Medical Association holds its annual meeting at the same time and place.

THE following letter is published at the request of Mr. L. C. Hopp, of Cleveland, for the benefit of Ohio druggists:

LEWIS C. HOPP, Sec'y. Ohio State Phar. Assoc.

DEAR SIR:—In order to increase the interest in answering the queries at the next annual meeting of the O. S. P. A., we will offer a prize for the best answer to any of the queries submitted by your committee. Also a second prize for the next best answer. The matter of deciding who are to be entitled to these prizes to be left to a committee of three, who are to be appointed by the President. The winner of the first prize will be entitled to any *prescription scale* in *Tromner's list* he may choose, not exceeding *twenty-five dollars* (\$25.00) list. The second prize will be a "*B. M. & Co.*" *combination suppository mould* costing *seven dollars and fifty cents* (\$7.50).

Yours truly,
BENTON, MEYERS & Co.

Acetico-Tartrate of Aluminium is said, by Altenstart and Schaefer (*Deutsche Med. Woch.*, 23, '85), to be almost a specific for ozena. A teaspoonful of a 50% solution is added to one-half or one pint of water, and is applied directly to the seat of the disease. Its action resembles somewhat that of a 20% solution of nitrate of silver, but is much more remarkable in its effects. The odor rapidly disappears, scabs become thinner, and are more easily detached, and the atrophied mucous membrane assumes a healthier appearance. When the bone has not become so diseased as to be loose, a cure may be expected in a fortnight. It is also stated that its effects in laryngeal ulceration are far superior to those of boric acid.

A Method for Approximately Estimating the Strength of Carbolic Acid.

ABOUT two years ago, Dr. Vulpius suggested that the percentage of absolute carbolic acid in any sample of crystallized acid could be determined by ascertaining the amount of water it was capable of dissolving. Mr. Theodore Salzer has made use of this suggestion, and worked out a table by means of which the percentage strength may be at least approximately determined.

Schlickum found that 1 molecule of phenol could unite with 2 molecules of water, which would be in the proportion of 94 : 36, or 100 : 38.3. Salzer found that 100 parts of the pure acid which he had in hands could combine with 35.3 parts of water, which figure sufficiently agrees with the former, for all practical purposes. Of course, the method cannot be expected to yield entirely accurate results; but it will be very useful in practice.

Salzer first prepared a series of known mixtures of pure, anhydrous liquefied carbolic acid with definite proportions of water, and determined subsequently, by experiment, how much water could still be added to each sample without rendering the liquid opaque (through an excess of water). He obtained the following results, the figures meaning *parts by weight*:

A mixture of C. Acid + Water.	still dissolves water.	A mixture of C. Acid + Water.	still dissolves water.
100	10	100	23
100	11	100	24
100	12	100	25
100	13	100	26
100	14	100	27
100	15	100	28
100	16	100	29
100	17	100	30
100	18	100	31
100	19	100	32
100	20	100	33
100	21	100	34
100	22	100	35
100	23	100	36
100	24	100	37
100	25	100	38
100	26	100	39
100	27	100	40
100	28	100	41
100	29	100	42
100	30	100	43
100	31	100	44
100	32	100	45
100	33	100	46
100	34	100	47
100	35	100	48
100	36	100	49
100	37	100	50
100	38	100	51
100	39	100	52
100	40	100	53
100	41	100	54
100	42	100	55
100	43	100	56
100	44	100	57
100	45	100	58
100	46	100	59
100	47	100	60
100	48	100	61
100	49	100	62
100	50	100	63
100	51	100	64
100	52	100	65
100	53	100	66
100	54	100	67
100	55	100	68
100	56	100	69
100	57	100	70
100	58	100	71
100	59	100	72
100	60	100	73
100	61	100	74
100	62	100	75
100	63	100	76
100	64	100	77
100	65	100	78
100	66	100	79
100	67	100	80
100	68	100	81
100	69	100	82
100	70	100	83
100	71	100	84
100	72	100	85
100	73	100	86
100	74	100	87
100	75	100	88
100	76	100	89
100	77	100	90
100	78	100	91
100	79	100	92
100	80	100	93
100	81	100	94
100	82	100	95
100	83	100	96
100	84	100	97
100	85	100	98
100	86	100	99
100	87	100	100

Upon these results is based the test-table proper, which shows (approximately) the percentage of absolute carbolic acid, after it has been ascertained how much water may be added to any sample of liquefied acid without rendering it opaque. This is the table:

If 10 Gm. of a liquefied carbolic acid can still dissolve, of water:	Then the sample contains of absolute phenol:
0.1	75.0
0.2	75.5
0.3	76.0
0.4	77.0
0.5	77.5
0.6	78.5
0.7	79.0
0.8	80.0
0.9	80.5
1.0	81.5
1.1	82.0
1.2	83.0
1.3	83.5
1.4	84.5
1.5	85.0
1.6	86.0
1.7	86.5
1.8	87.0
1.9	88.0
2.0	89.0
2.1	89.5
2.2	90.0
2.3	91.0

If ordinary carbolic acid is examined in this manner, a correction should be made by adding 2 per cent.

[The author does not expressly prescribe the temperature at which the experiments should be made. But as it is necessary to make them with the *liquefied* acid, it follows that the latter must previously be warmed sufficiently to render it liquid. And it will undoubtedly be best to use water of the same temperature as the acid for mixing with it. According to the author, the results are but little influenced by

a moderate variation of temperature.]

The experiment may be performed in a few minutes, even if the water is only added in drops. [When a large volume is available, it will be advisable to use ten times the quantity of acid and water given in the last table.]

If a sample of acid which has been rendered opaque by the addition of too much water, is allowed to stand in an open vessel, it becomes clear after awhile. This is, however, not due to a subsequent solution of the water, but rather to the evaporation of the excess. —After *Pharm. Zeit.*, 1886, 10.

The Estimation of Glycerin.

It is often necessary to estimate the amount of glycerin contained in mixture. We have printed several papers on this subject, one of them being by Professor Prescott (New Rem., 1878, 354). While the usual pharmaceutical preparations containing glycerin (such as fluid extracts, for instance) are much more complex than natural wines, yet the methods of determining the amount in the latter have been so thoroughly studied and improved that they will doubtlessly be applicable with equal accuracy to the former.

Some years ago, an Association of German Chemists had agreed upon a uniform plan of estimating glycerin in wines. This process has recently been subjected to a critical examination by L. Medicus and C. Full, of Würzburg, who gave particular attention to the following points:

1. How much lime and quartz sand should be added to the sample?
2. What is the proper amount of alcohol used for extraction?
3. How should the alcohol be evaporated or distilled off?
4. How should the ether be added?

The following is the process as amended by the authors.

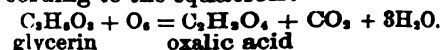
100 C.c. of wine are evaporated on the water-bath in a capacious, not flat-bottomed porcelain capsule to about 10 C.c., 2 Gm. of quartz-sand and 3 C.c. of milk of lime [containing 200 Gm. hydrate of calcium, Ca(OH)₂, in 500 C.c.] are added, and the mixture evaporated almost to dryness. The residue is treated, under constant trituration, with 50 C.c. of alcohol of 96% by volume, the mixture, while being stirred, raised to boiling on the water-bath, and the solution, after being somewhat cooled, poured through a filter. The residue is treated with 3 successive portions, each, of 50 C.c. of the same alcohol, so that the united filtrates shall measure 200 C.c. Of this amount, 150 C.c. is distilled off, and the remainder is evaporated on the water-bath to a viscid consistence. The residue is dissolved in or treated with 10 C.c. of absolute alcohol, the solution transferred to a bottle provided with a tight stopper, 15 C.c. of ether gradually added, and the whole well mixed. When the layers have separated completely, the layer of ether-alcohol, which must be filtered if necessary, is cautiously evaporated in a thin small bottle, the glass stopper of which is laid aside, until the residue in the bottle ceases to flow readily to and fro. The bottle is then heated for another hour in a steam drying oven, stoppered, and, when cold, weighed.

The above process yields results which do not differ more than four per cent from the true amount. In some of the author's experiments, the approach to the actual quantity was much closer. [In Professor Prescott's experiments, reported in the paper above mentioned, the approach to the actual quantity present was still closer.]

The authors expressly add that the glycerin thus obtained must not be regarded as perfectly pure. —After *Rep. d. Anal. Chem.*, 1886, No. 1.

In connection with the preceding paper, it will be of interest to state that

Messrs. William Fox and J. A. Wanklyn, having found the ordinary methods of glycerin determinations to be inaccurate, worked out the method given below, which is based on the fact that glycerin oxidized with permanganate of potassium in a strongly alkaline solution, gives *oxalic acid* according to the equation:



The oxalate can be precipitated by a lime salt, and the amount of oxalic acid determined, and the equivalent quantity of glycerin calculated therefrom. Their process is as follows:

An aqueous solution of glycerin (which should not contain more than 0.25 gramme C₃H₈O₃) is made strongly alkaline by adding 5.0 Gm. of solid caustic potash; powdered permanganate of potassium is then gradually added, until the solution is of a permanent pink color; the solution is kept at the boiling-point for half an hour, and then the excess of permanganate decomposed with sulphurous acid, either in solution or as gas. The solution, which should now be colorless, is filtered from the precipitated oxide of manganese, and made acid with acetic acid, and boiled; a calcium salt is added, and the resulting oxalate collected on a filter and thoroughly washed with boiling water. As the precipitate is not pure oxalate of calcium [it also contains sulphate], the oxalic acid in the calcium salt is estimated by titrating with standard permanganate in the usual way; with a moderate amount of care, this process is very accurate; the difference in several experiments should be under one-half per cent.

In the saponification of fats in which it is proposed to estimate the glycerin, care should be taken to have the whole of the alcohol driven off, as dilute alcohol treated with alkaline permanganate gives oxalic acid. It may be mentioned that the acids of the acetic series do not oxidize to oxalic acid with alkaline permanganate, whilst the acids of the acrylic series do. —*Chem. News and Chem. and Drugg.*

The Green Coloration of Apomorphine and its Solutions.

MR. BERNBECK, of Ludwigshafen, writes to the *Pharm. Zeitung* on the subject of the development of a green color in dilute solutions of apomorphine. This is a well-known occurrence, but, in our experience, is not confined to dilute solutions; it is also noticeable in strong solutions and even sometimes in the salt itself.

The green color has been supposed to be produced through the influence of light, and the solution of the salt has therefore been usually dispensed in dark glass.

Mr. Bernbeck having observed that the addition of a small quantity of hydrochloric acid to the solution retarded or prevented this change, he suspected that the latter was due to the influence of ammonia. This was made evident in the following manner:

A solution of apomorphine, prepared either with distilled water, or with syrup, or infusion of ipecac, etc., and containing a small quantity of hydrochloric acid, is mixed with highly diluted water of ammonia in drops until the reaction is alkaline. An emerald green color will be the result. The same effect is produced if the solution is placed into a room in which ammoniacal vapors are present, but in this case the change of color takes place much more slowly.

For this reason, it appears to be advisable that solutions of apomorphine should be dispensed containing a slight excess of hydrochloric acid, and should not be kept in sick-rooms or other places where ammoniacal vapors are liable to be given off.

HEATING AND DRYING APPARATUS.

PROF. VICTOR MEYER describes a form of drying apparatus which he employs when a single vessel is to be successively exposed to varying temperatures, or to a constant temperature obtained by definite liquids.

The apparatus is constructed of copper, and all joints, etc., are hard-soldered. It stands on a tripod, for convenience, and is heated by a gas-burner attached to the apparatus, but not shown in the cut. At *b*, a tube is attached in which a glass tube is inserted which acts as an upright condenser. A current of air can enter by the tube *a*, and the escape of air and moisture takes place at *d* which is generally protected by a sliding lid. The crucible or other vessel may be placed directly upon the bottom of the inner box, but, to keep it clean, a perforated porcelain cylinder *e* may first be introduced.

To produce constant temperatures, the following liquids may be used :

Boiling : Produces in the interior a temperature of :

Water	206.6° F.
Toluol	224.6° F.
Xylol	276.8° F.
Anisol	302° F.
Tar-Cumol	232°-323° F.
Naphthalin	392° F. and over.

A sufficient quantity of any of these is introduced into the chamber, and a small flame applied below so that the liquid will boil, without the vapor rising more than an inch or so in the condensing tube *c*.

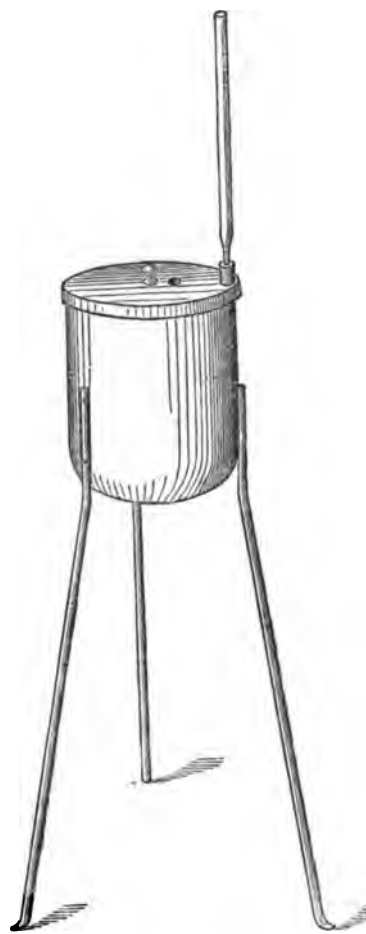
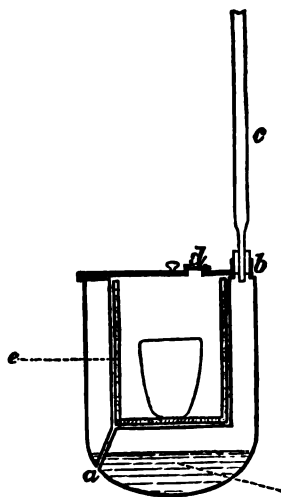
This form of apparatus answers not only as a drying oven, but may be used as an oil-bath for many purposes. Whenever possible, it is of advantage to use a separate apparatus for each different kind of liquid.—After *Ber. d. Deutsch. Chem. Ges.*, 1885, 2,999.

The Flower Harvest at Mitcham (Eng.).

A REPORT in the *Chemist and Druggist* states that the lavender crop, which is cut in the early part of August, was last year unusually good both in quantity and quality. The plant flowers three years in succession, those of the second year being considered the finest. After the third year it grows stalky and coarse. A field that has grown lavender for three years is generally changed for wheat, oats, or potatoes for a year, then planted with peppermint for the next three years, and again with wheat or potato before coming back to lavender. Four years ago was *l'année terrible* for lavender-growers. Frosts and an apparently fungoid disease almost totally destroyed the crops. Messrs. Bridger, of Mitcham, that year distilled less than a Winchester quart of oil which, even at eight guineas per pound, was very poor business. Curiously the disease has not appeared again, though no special precautions seem to have been taken against it. The real lavender water, that is the distilled water from which the lavender oil has been collected, is a perquisite of the workmen, and is sold at Mitcham by the quart. Messrs. Bridger keep their oil in Winchester, uncorked. Lavender is not a volatile oil (?), and there seems to be a theory that it is improved by contact with the air.

The peppermint crop has not been an exceptionally large one this year, but the oil is said to be very fine. There are two English oils of peppermint distilled, one from white, the other from black peppermint. The black peppermint, however, is not grown in Mitcham proper. There seems to be no botanical difference between these plants, but the difference in aroma is

considerable, as is evidenced by the fact that, while the oil from the black peppermint is worth about 30s. per pound, that from the white will bring nearly 50s. Peppermint also grows for three years. After the harvest the fields are "dotted," that is, the new runners are hoed; in November the old plants are ploughed in, and the young ones covered. Farm-yard manure seems to be all that is used at Mitcham. For peppermint, elsewhere, wool-dust from Bradford is said to be a favorite manure.



Meyer's drying apparatus.

Chamomiles, which are largely grown by Messrs. Bridger, are a dainty crop. The beds are set out every March, and the flowers are gathered in August. They are not fit to gather until they are quite white, and then a heavy rain will seriously damage them. Another difficulty, Mr. Bridger says, is with the gathering. Formerly women were glad to do it for the 1d. per pound paid; now they have to employ children, who are less particular. Increasing the wage is a yet untried remedy.

Roses on this farm also yielded satisfactorily last year. Messrs. Bridger have been growing some

Provence roses, and have distilled rose-water, but they do not seem satisfied with the experiment, and do not intend to continue the cultivation. The *Rosa Gallica* is, however, evidently good business with them. This harvest requires very watchful attention. "Gather ye rosebuds while ye may," wrote Herrick, and he quite correctly adds that "the same flower that smiles to-day, to-morrow may be dying." But for druggists they must be caught even before they smile. Only those gathered in the bud pass as "firsts." If the flower has blown it only sells for confection, and at a lower price. In thundery weather sometimes the buds will open with provoking alacrity, and very early in the morning, between three and six, is the only safe time for collecting the buds. Then they are passed to a number of women, who deftly nip the white claws from the petals, and the still unopened velvety buds are dried rapidly over a stove, and sold for the *Folia Rosæ Gallicæ* of the shops. The leaves for confection are not dried. Bentley and Trimen tell us that 2,000 rosebuds yield about 10 lbs. of dried or 100 lbs. of fresh petals.

Licorice is grown largely at Mitcham; so are boys. Consequently it has been found necessary to keep the licorice-fields near home. The plant takes four years to come to perfection. The roots are dug up in November, and those which are not dried for powder are buried in trenches. Licorice-roots are sometimes four or five feet long, but they want a rich loam to grow to that extent. For powder the roots are trimmed and decorticated, cut into little finger-lengths, and carefully dried over a furnace. The trimmings are also dried and powdered for horse-powders.

Lovage is another of the products of this farm, but it seems to be going out of use. Poppy-heads are regularly raised here, as also are belladonna, henbane, and stramonium.

One other crop may also be mentioned—the *Ecballium Elaterium*, or squirting cucumber. Messrs. Bridger grow the plant and prepare the elaterium, and the business is by no means a sinecure. "We lost one man through it," Mr. Bridger observed, and the man who works it now, and showed us all his apparatus, remarked that during the period when that work is on, he never gets any rest. The English elaterium is well known for its purity, but it does not bring the price it once did. Years ago it fetched three guineas an ounce; now an ounce will not command a single guinea, though that price is four or five times as much as is paid for the foreign product, most of which comes from Malta. Mr. Bridger talks of suspending his cultivation of this uncanny plant for a year or two, apparently on the principle of absence making the heart grow fonder.

There are four stills in the Bridgers' place, and the biggest is a curiosity. No one would venture a guess as to its capacity, but we were told that its regular charge is a ton and a half of herb. The same still can be used for lavender, peppermint, and chamomile. Filling with water and vaporizing it off once, entirely clears it of the odor of the last operation.

Quantity of Bromine in Sea-Water.

RECENT investigations of Emil Berglund (*Ber. d. Chem. Ges.*, 1885, 2,888) have shown that previous determinations of bromine in sea-water have generally furnished figures which were too high, and also, that the proportion of bromine in the water is everywhere about the same. The mean of the author's results is about 64 milligrammes of bromine in 1 liter, or 1 grain in about 34 fluid ounces.

Chocolate Manufacture at Bordeaux.

U. S. CONSUL GEORGE W. ROOSEVELT, of Bordeaux, reports:

There are several chocolate manufacturing factories in this consular district. The largest share of public esteem and confidence is enjoyed by Messieurs Louit Frères, established at Bordeaux since 1827. Their factory proper, machine shop, and other necessary buildings cover very nearly four acres of ground. With the exception of the large granite cylinders and moulds, all the machinery requisite to the making of chocolate is made on the premises. Three hundred and fifty hands (men and women) are employed. Each department is under the supervision of an experienced foreman. The average weekly production is seven thousand pounds of chocolate, which is mostly consumed in France. Messieurs Louit Frères import the cacao-beans, which are delivered here in barrels and gunny sacks containing from ninety to one hundred and sixty pounds each, principally from Puerto Cabello. The first important step in the preparation of chocolate is to sort according to size, and to clean the cacao-beans. They are then roasted (a process similar to that applied to the green coffee-bean); the roasting thoroughly dries the bean, and renders friable the thin, brown shell. Cacao acquires different qualities according to the different degrees of roasting, as, for example, the Italians roast the beans to excess, which produces a bitter chocolate. The Spaniards go to the other extreme and insufficiently cook the cacao, which gives a more greasy, but less bitter article. The French adopt a happy medium between the two extremes, with the excellent result of retaining an agreeable equality of taste and perfume, and giving to the consumer an unrivalled chocolate. After the cacao-bean is roasted, the thin, brown shell is separated from it by winnowing. The beans, with a proportionate amount of sugar and flavoring, are then put into the crushing-machine to be reduced to paste. When chocolate was first introduced into France, it was made by journeymen chocolate makers, going from city to city, and carrying with them their primitive machines. In those days, the beans were crushed by a pestle in a heated mortar. This custom still exists in certain provinces of France. In all the important manufacturing factories this primitive mode has been superseded by machinery, and the crushing and mixing is done by a machine with a large granite cylinder revolving over a heated marble slab. When the paste is thoroughly mixed, it passes from this machine to another which completely expels all air globules from the mass; it is then put into moulds, and left to cool. The moulds are in the form of tablets, divided into fractional parts, which are easily separated, each small tablet being sufficient to make one cup of chocolate. The tablets, after being carefully wrapped in tinfoil, to protect them from dampness or other causes which may affect the quality or perfume, especially the latter, which is very volatile, is finally wrapped in a paper envelope, and thus becomes the chocolate of commerce.

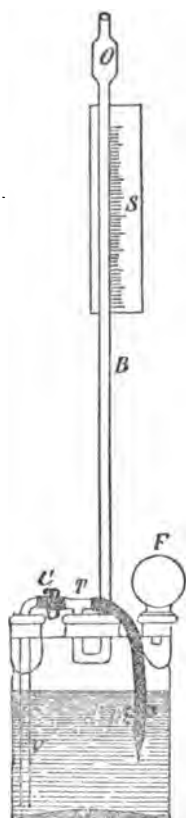
To make good, pure chocolate, it costs the manufacturer from forty to fifty-five cents per pound. A fair article, however, can be made at a much more reasonable price.

Nerolin is a white crystalline powder, introduced by Schimmel & Co., of Leipsic, said to contain all the odor of neroli oil in one-tenth of the weight of the latter. It is soluble in 30 parts of strong spirit or in 25 parts of fatty oil, but only to a very slight extent in water.—*Chemist and Druggist*.

A NEW FORM OF BURETTE.

K. BURDON recommends the form of burette here illustrated for analytical operations in which one and the same solution is required to be used for a long time. It has the advantage that the burette needs no holder, and the whole apparatus may be carried about, and placed on any flat surface.

A three-necked flask or bottle is selected, with a rather wide central neck. Into one of the others a tube with rubber bulb, *F*, is fitted, and into the other a glass-tube passing through the bottom, the outer end of which is bent and connected with a T-branch, connecting both with the burette *B* and with the out-let tube. The latter is provided with a pinch-cock *D*, and another pinch-cock is applied at *C*. If the latter is opened while the former (*D*) is shut, and the air in the flask is compressed by means of the bulb, the liquid will rise in the burette to any desired mark, where it will be retained by releasing pressure on the pinch-cock *C*. The liquid will then flow from the burette by suitable pressure upon *D*.—*Polyt. Journ.*, 256, 503.



Burdon's burette.

Which is the most delicate Indicator for Acids or Alkalies?

PROF. G. LUNGE draws attention to the fact that the elaborate researches of R. S. Thomson (published in the *Chem. News*) have conclusively shown that the most delicate indicator for acid or alkalies is the substance proposed by Prof. Lunge already in 1878 and since then examined and recommended by many other observers. This substance is "dimethyl-amidoazobenzol-sulphonic acid," first known in commerce as "Poirrier's orangé III," and afterwards called "helianthin." The latter name, however, was subsequently applied also to other bodies, and for this reason, Lunge proposed to designate it as *methyl-orange*. Whatever objections have been made against this substance as indicator are all due to the circumstance that too much of it has been used for coloring, or that the liquid to be titrated was heated, or that some other but the above-named chemical has been supplied under this name.

Prof. Lunge also makes a curious statement regarding a very delicate indicator recommended by R. Engel and J. Ville (in *Compt. Rend.*, 100, 1,074), namely, the so-called cotton-blue of Poirrier (of St. Denis, near Paris), with the mark C.L. This agent passes from bright rose-red, through violet, to pure blue, and the transition is very sharp. But as has been ascertained by Lunge and others, the transition point of the color does not exactly coincide with the neutralizing point of the liquid, but appears already before the caustic alkali is completely neutralized. Instead of 10 C.c. of normal acid, only 9.5 C.c. are required to produce the change.—*After Ber. d. Deutsch. Chem. Ges.*, 1885, 3,290.

[In our opinion this may possibly yet be accounted for by some simple explanation which so far has escaped notice. We expect to be in possession of a sample of the substance shortly, and intend to give it a trial.]

Detection of Gamboge in Mixtures.

MR. ED. HIRSCHSOHN, of St. Petersburg, recommends the following method for detecting gamboge in mixtures.

Triturate the dry object—if a liquid, it is first to be evaporated with powdered glass—to a very fine powder, and agitate the latter with petroleum-ether. Should this remain colorless, another sample must be strongly acidulated with hydrochloric acid, and again treated with petroleum-ether. The reason is this, that the latter menstruum does not dissolve gamboge if soap is present, which is frequently the case in pills. If the menstruum remains colorless in the second experiment, gamboge is absent. But if it has a yellow color, the presence of gamboge may be detected by the following further tests. A small portion of the solution is shaken with dilute soda-solution. If the latter acquires a red color, the larger remaining portion of the solution is saturated with gaseous ammonia, any flocculi thereby produced separated by filtration, washed with petroleum-ether, and then dissolved in alcohol. On adding to this a few drops of alcoholic solution of ferric chloride, it should turn black; and when mixed with dilute solution of soda, it should not acquire a red, but only a darker yellow color. Mr. Hirschsohn states that he has been able to prove the presence of as little as 0.01 Gm. (about $\frac{1}{10}$ grain) of gamboge.*

Reward for the Discovery of a Substitute for Gum Senegal.

THE Société industrielle de Muhlhausen has announced a large number of rewards, in the shape of various medals and sums of money, for the discovery of industrial improvements, chiefly relating to the textile industry. Among them is one which may possibly interest some of our readers.

A medal of honor and a prize of 5,000 francs is offered for the discovery of a substance, suitable as a substitute of gum senegal in all of its applications, and costing less than the latter, which is now worth about 100 francs per 100 kilos.

Berthault's Taffeta is a new dressing for wounds lately introduced in Paris. This plaster is said to be as transparent as glass, and as thin as an onion skin. The condition of the surface covered by it is as easily seen as though it were uncovered. It is as elastic as India-rubber, is not permeable by fluids, and is not affected by changes of temperature, acids, alkalies, nor the secretions of the body.

* Abstract of a paper on this subject by Ed. Hirschsohn in the *Pharm. Zeitsch. of Russland*. Reprint received from author.

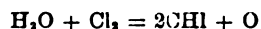
CONDENSER FOR EXTRACTION APPARATUS.

F. ALLIHN describes an improved form of upright condenser, which may be used with highly volatile substances, such as ether, without having to fear any loss of liquid. As will be seen from the cut, the condensing tube proper consists of a series of bulbs connected by narrow branches. It has been ascertained by Allihn that this form of condenser is the most effective. When the ether boils briskly (at a temperature of the water-bath of 60-70° C.), and a moderate current of water passes through the condenser, the ether vapor is almost completely condensed in the two lower bulbs. Only when a large volume of vapor is suddenly given off, does any of it ascend as high as the fourth bulb. —*Zeitsch. f. anal. Chem.*, 1886, 36.



On the Decomposition of Chlorine Water in Sunlight.

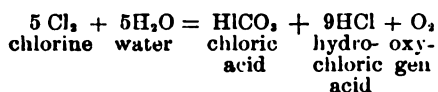
It has been held heretofore that an aqueous solution of chlorine, when decomposed by sunlight, was changed to an aqueous solution of hydrochloric acid, and that oxygen was liberated:



Alfred Popper, however, a short time ago (*Liebig's Annalen*, 227, 161) demonstrated the fact that the resulting aqueous solution, when neutralized with potassa, contained a considerable proportion of chlorate, besides the chloride of potassium. The author's first experiments did not show whether the chloric acid was contained in the aqueous liquid, decomposed by sunlight, or whether it was produced during the evaporation of the neutralized solution, perhaps by the decomposition of a hypochlorite. To decide this question, and also to ascertain whether the chlorate and chloride thus obtained were always formed in definite and constant proportions, a new series of experiments was undertaken by the author.

The results obtained showed that the chloric acid must have been present in the decomposed chlorine water before evaporation. It also showed that the relation of chloric to hydrochloric acid contained in the decomposed water was as 10.9 to 40.79.

It follows from the author's statements that the reaction illustrating the decomposition of chlorine water is as follows:



In addition, there appear to be traces of a compound present—perhaps hypochlorous acid or a derivative of it—which separates iodine from iodide of potassium. Bromine water appears to decompose in precisely the same manner. —*Liebig's Annalen*, 231, 137.

Oil of *Jatropha Curcas*.

In one of our last numbers we pointed out the improbability of the truth of the report that the fixed oil obtained from *Jatropha Curcas* (once known under the name *Oleum Ricini Majoris*), has ever been used for adulterating or as a substitute for olive oil. In another journal we read now that it is often used for adulterating cotton-seed oil. This is as unlikely as the other. Accidental admixture may have occurred, but wilful adulteration of such an abundant and cheap article as cotton-seed oil, by means of an oil which is comparatively scarce, is out of the question.

APPARATUS FOR FRACTIONAL DISTILLATION.

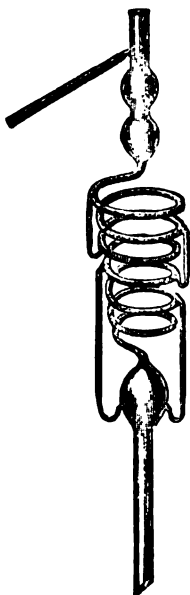
THE apparatus here described was designed by Dr. Francesco Anderlini, of Padua. It consists of a coil of five or more turns of glass tubing, which are connected together as originally proposed by Le Bel and Henninger, as shown in the cut, by drain-tubes. The lower ones of these are somewhat contracted near their lower end, and all of them form a small pocket which keeps full of liquid, and thereby prevents the steam ascending from the flask from passing out by these tubes. The firm of C. Desaga, of Heidelberg, furnishes this apparatus. —*Chemiker-Zeit.*, 1885, No. 53.

Naphthol.

The pharmacopœia committee of the German Pharm. Association propose to characterize the substance as follows:

Naphtholum
[Iso- or β -Naphthol].

Colorless, crystalline scales of a silky lustre, or a white, crystalline powder of a faint, phenol-like odor, and a sharp, burning, but not persistent taste, melting at 123° C. [253.4° F.], and boiling at 286° C. [546.8° F.]. It is soluble in about 1,000 parts of cold and in 75 parts of boiling water, forming a solution of an aromatic taste, which acquires a violet fluorescence upon the addition of ammonia, and with chlorine water yields a strong, white turbidity, which disappears again on the addition of ammonia, the resulting liquid assuming a green, afterwards brown tint. Ferric chloride colors the solution greenish. Ferrous sulphate, as well as

Anderlini's
Fractional Still.Welton's
Safety-Pipette.

acetate of lead, produce no reactions. Naphthol is easily soluble in alcohol, ether, benzol, chloroform, oils, and alkaline solutions.

Naphthol should be soluble in 50 parts of official (10%) water of ammonia, and when precipitated from this solution by hydrochloric acid, should appear of a pure white color. Its hot aqueous solution should not assume a violet color with ferric chloride [abs. of carboic acid]. When heated on platinum foil, it should be completely dissipated.

According to Prof. Flückiger, ferric chloride may be used as a test to distinguish between the alpha and the beta (or iso) naphthol. If added to an aqueous solution of the latter, it produces greenish color, and in five minutes a white turbidity. After two hours, the liquid will have become clear, and needle groups of tolerably pure beta-dinaphthol will have been

deposited. In the aqueous solution of alpha-naphthol, the reagent produces a white precipitate of alpha-dinaphthol, which gradually turns violet, beginning from the bottom.

SAFETY-PIPETTE.

WHEN caustic or irritant liquids are to be sucked up into pipettes great care must be exercised to prevent any of the liquid or the evolved vapors getting into the mouth. We have, on several occasions, met with accidents from this cause, in spite of reasonable care to guard against it. On one occasion the writer attempted to fill a pipette with moderately strong hydrochloric acid by gentle suction, and though the rate of inflow was carefully watched, yet it had not been noticed that the orifice of the pipette was accidentally contracted by a small splinter of glass, wedged in. This became suddenly detached and exposed the full orifice of the pipette, causing such a rapid influx of acid, that the latter reached the mouth before suction could be stopped. On another occasion, caustic potash solution was projected into the mouth by a similar accident.

We have, since we made the latter experience, always used an intermediate vessel when attempting to aspirate any caustic liquid by the mouth, and can recall several instances when this precaution has certainly resulted in saving us from injury.

A safety-pipette, specially constructed for this purpose by H. Welton—which may be used for drawing bromine, acids, and other similar liquids into the pipette—is shown in the accompanying cut. The pipette is closed at the top and is filled by suction at the lateral tube, causing the air contained in the pipette, or any liquid or vapor that may be carried over to pass through soda-solution contained in the safety or wash bottle. —*Génie civil*, 1885, 257.

Unchangeable Solution of Starch and Iodide of Potassium.

STARCH and iodide of potassium solution is a reagent which is used for various purposes, but which cannot be kept long without alteration. For this reason, it has been recommended to replace it by starch and iodide of zinc solution.

Alexander Müller has shown that ordinary starch solution may be kept for years by treating it with caustic potassa. C. Reinhardt has utilized this method for preparing a permanent solution of starch and iodide of potassium as follows:

Weigh 5 Gm. of finely powdered wheat starch, put it into a flask holding 1 liter, add about 50 C.c. of water, shake well, wash the adhering starch down into bottom of the flask by means of the wash-bottle, and add 25 C.c. of solution of caustic potassa (prepared from 1 part of caustic potash purified by alcohol, and 2 parts of water). Shake well. To the homogeneous, gelatinous mass thus produced add 500 C.c. of water, also 2 Gm. of iodide of potassium, and heat the flask on a plate of asbestos to boiling—repeatedly shaking—until a clear solution results. Let cool, pour the contents into a graduated cylinder, fill it up with water to 1,000 C.c. and filter.

This solution will keep any length of time and need not be put in a dark place. —*Zeitsch. f. anal. Chem.*, 1886, 37.

Preparation of Vanillin from the Resin of the Olive Tree.—A. Scheidel, of Milan, has patented (Germ. Patent, No. 33,229) a process, by which the resin of the olive tree, or else the principle known as olivine (re-crystallized from alcohol) may be converted into vanillin by oxidizing agents.

Churchill's Tincture of Iodine.

In answer to a correspondent, the *National Druggist* gives the following collection of formulas for this preparation, and remarks that it is "an excellent example of the diversity of formulae for unofficial preparations."

"The following three formulæ have been furnished us by druggists of this city, each one stating that his was the original:"

Take of
Iodine..... 2½ troy oz.
Iodide of potassium... 4 drs.
Alcohol..... 12 fl. oz.
Water..... 4 fl. oz.

Dissolve the iodine in the alcohol, and the iodide of potassium in the water. Mix the two solutions.

This contains 75 grains of iodine, and 15 grains of iodide of potassium, in each fluidounce.

Take of
Iodine..... 80 grs.
Iodide of potassium.... 40 grs.
Alcohol..... 1 fl. oz.

Mix. Fiat solutio.

This contains 80 grains of iodide of potassium, and 40 grains of iodine, to the fluidounce, and hence is stronger than the former preparation.

Take of
Iodine..... 2½ troy oz.
Iodide of potassium... 4 oz.
Alcohol..... 12 fl. oz.
Water..... 3 fl. oz.

Mix. Fiat solutio.

This is of the same strength as the first formula, but differs in menstruum.

The New York Hospital uses the following:

Take of
Iodine..... 1 dr.
Iodide of potassium..... 2 drs.
Water..... 2 fl. oz.
Alcohol..... 2 fl. oz.

Mix. Fiat solutio.

This contains 15 grains of iodine, and 30 grains of iodide of potassium, to the fluidounce.

The following is taken from Beasley's Book of Prescriptions:

Take of
Iodine..... 1 troy oz.
Iodide of potassium... 2 troy oz.
Water..... 2 fl. oz.
Alcohol..... 12 fl. oz.

Mix. Fiat solutio.

The strength is 30 grains of iodine, and 60 grains of iodide of potassium, to the fluidounce.

Some time ago, an exchange gave the following:

Take of
Recrystallized iodine... 5 drs.
Iodide of potassium..... 1 dr.
Stronger alcohol..... 3 fl. oz.
Water..... 1 fl. oz.

Rub the iodine and iodide of potassium together until finely divided. Dissolve as much as possible in the water, decant the aqueous solution, and triturate the residue with the alcohol until dissolved, and mix both solutions. This contains about 75 grains of iodine, and 15 grains of iodide of potassium, to the fluidounce.

A druggist should never dispense this tincture on a prescription until he knows the strength intended by the prescriber.

Local Sedative for Teething of Infancy.

THE following is recommended by Dr. Bouchut, of Paris, for use in painful dentition:

Cocaine muriate... 1 part.
Sodium borate..... 1 "
Syrup of Marshmallows... 20 parts.
Syrup of Poppies..... 10 "

M. Rub the gums gently with the syrup four times a day.

Quillaia as a Substitute for Senega.

It is well known that the acrid principle contained in senega which produces such a peculiar sensation, particularly in the fauces, is identical with that found in several other plants, and that it had been known by various names, derived from the latter, until its identity was fully recognized. It was first discovered by Schrader in the beginning of this century, in the root of *Saponaria officinalis* L., and was named saponin. Subsequently it was found in the root of *Gypsophila Struthium* L., certain species of *Dianthus*, *Lychnis*, and *Silene*; in *Agrostemma Githago* L.; *Monnina polystachia* R. et P.; *Polygala Senega* L.; *Quillaia Saponaria* Mol.; and *Chrysophyllum glycyphleum* Cas.

The physiological effects of saponin have also been often studied, though the different experimenters did not all employ saponin derived from one and the same source. But only one previous medical writer, viz., Martin St. Angelo, is known to have used pure saponin therapeutically; his saponin, however, was named monesia, being derived from monesia bark which comes from *Chrysophyllum glycyphleum*. He employed it as a styptic in uterine hemorrhages.

Dr. Kobert, of Strassburg, now proposes to utilize this frequent occurrence of saponin for practical therapeutics. He finds that quillaia bark contains about five times as much saponin (or senegin)—together with another glucoside, existing in similar proportions in both drugs—and he therefore suggests that preparations of quillaia (which is a cheap substance) be used in place of those of senega. Dr. Kobert calls the two glucosides here mentioned—and which, according to him, are comprised and confounded together under the old name of polygalic acid [or senegin, or saponin]—"quillaic acid," and "sapotoxin," respectively. And he states that it has been found by clinical investigations in Halle, Strassburg, Freiburg, and elsewhere that the administration of senega can be very efficiently replaced by that of quillaia.

The therapeutic results, he says, hitherto obtained may be expressed as follows: When expectoration is difficult from the tenacity of the mucus, it is facilitated through the latter being rendered thinner and more copious; at the same time the stimulus to expectorate is increased. It naturally follows that this remedy is not suitable for every case, and that it must not be employed when the urgency to cough and the raw feeling in the throat get too acute. Vomiting and diarrhoea occur more seldom than after the use of senega. Any aromatic or simple bitter may be used with it as a flavoring agent. The drug itself contains a large quantity of a sweet carbo-hydrate, and consequently can be employed in the case of poor persons quite well without any corrective, which is, of course, not the case with senega. The remedy is contra-indicated in cases of ulceration in the throat, or in the gastro-intestinal disturbances, since it is too energetic an irritant for such.—*Centralbl. f. klin. Med. and Med. Rec.*

Paraldehyde Formula.

MR. G. F. HODGSON, an English surgeon, gives the following formula for administering paraldehyde:

Paraldehyde... 3 i.
Spirit of Chloroform..... ℥xv.
Compound Tragacanth powder... ʒi.
Syrup of Orange-peel..... ʒiv.
Water, enough to make..... ʒiij.

M. To be taken in one dose for producing sleep in cases of gout, mania, hypochondriasis, delirium, migraine, etc.

Thymolphthalein.

AMONG the derivatives of phthalic acid, there is one substance which has been permanently introduced into the list of reagents, namely phenolphthalein, which strikes a red color with the least trace of free alkali.

Another derivative, namely, thymolphthalein, has lately been added, which promises to serve for similar purposes, and may supplement the preceding reagent in some cases, since it does not give a red, but a blue color (more or less intense) with alkalis.

Acids cause the blue color of the latter to disappear just as they extinguish the red color of phenolphthalein.

Mr. C. Traub has given (in *Arch. d. Pharm.*, July [II.], 1885) a method for preparing this substance, and a description of its properties.

According to this author, equal parts of thymol, phthalic anhydride, and chloride of zinc are heated in a flask at a temperature not exceeding 150° C. (302° F.) for a period depending on the quantity of material to be operated on. The reaction progresses very quietly; the contents of the flask assume a fine red color, which remains as long as the above temperature is not exceeded. When the mass is in quiet fusion, the reaction is terminated. Boiling, highly diluted hydrochloric acid is first added to it, until it ceases to dissolve anything; the mass is then washed with boiling water; and subsequently, any unaltered thymol is removed by petroleum ether. Finally, the residue is purified by treating it several times with ether, and recrystallizing from ether-alcohol.

The product appears in white, prismatic needles, easily soluble in alcohol, less easily in benzol, ether, or chloroform, and but slightly so in water. It melts between 252° and 254° C. (485°-489° F.).—*Pharm. Zeit.*

Kumys.

THE editor of the *Therapeutic Gazette* gives the following directions for making a good kumys:

Take of milk, one pint; white sugar, one tablespoonful; yeast, one-sixth of a Fleischman's Vienna cake as sold in Philadelphia stores. We believe one of these cakes is about equivalent to one-half pint of ordinary yeast, but persons making their own yeast in the country will have to get its exact value in this formula by a little experimentation. The sugar is to be added to the milk, then put into a bottle which can be tightly corked, and the yeast poured in; the whole well shaken, thoroughly corked, and put into a warm place for from six to twelve hours, according to the temperature and strength of the yeast and the variety of the koumiss desired. The longer the fermentation the more sour the koumiss. On removal from the warmth, the bottle is to be well shaken and be put upon ice to cool. This koumiss may be kept one or two days, but is best when prepared when wanted. In practice we have found it more convenient to use an ordinary beer bottle, with a patent stopper. As the conditions of this formula are not absolute, a little experience is usually necessary to get a good article.

[It will be found that a better way to secure a good article is to follow more closely the method of the Tartar tribes in using kumys itself to cause the fermentation. It may be necessary to start with yeast, but once commenced, a gill of kumys will answer to ferment a quart of milk.—ED. AM. DRUGGIST.]

AN effort is being made to secure the enactment of a Pharmacy law in Maryland.

FORMULAS.

Milk of Magnesia.

A STABLE mixture is produced, according to E. Dieterich, in *Pharm. Centralh.*, by triturating

Calcined Magnesia..... 10 parts
with
Distilled Water.....100 "
and mixing with
Glycerin..... 40 "

Varnish for Metals.

Shellac, pale..... 50 parts
Sandarac..... 50 "
Alcohol, enough to make 1,000 "

Dissolve the shellac and sandarac in 900 parts of alcohol by maceration, filter, and add enough alcohol to make 1,000 parts.

This varnish may be applied to all kinds of polished metal.—EUGEN DIETRICH in *Pharm. Centralhalle*, No. 41.

Bookbinders' Varnish.

Shellac, pale.....120 parts.
Sandarac..... 30 "
Venice turpentine..... 14 "
Spirit of ammonia 5 "
Oil of lavender 1 "
Alcohol830 "

Macerate, with repeated stirring, until solution has been effected. Then filter.

To bring out the gloss fully upon leather, the latter should be dried over a charcoal fire.—EUGEN DIETRICH in *Pharm. Centralhalle*, No. 41.

Clarifying Alcoholic Liquids.

THE following mixture is recommended by E. Dieterich:

Dried Egg Albumen.... 40 parts.
Sugar of Milk..... 40 "
Starch 20 "

Mix, and reduce to a very fine powder.

To clarify alcoholic liquids, mix them with the powder in the proportion of 5 Gm. per liter (about 75 grains per quart), and shake well and repeatedly during several days, keeping the liquid in a moderately cool place. Then filter.—*Pharm. Centralhalle*.

Syrup of Hydrobromic Acid.

P. COUDURE recommends to prepare this syrup in the following manner:

Bromine 1 part.
Distilled Water.....20 parts.
Oil of Peppermint.....1 part.
Sugar83 parts.

Mix the bromine with the water and add the oil of peppermint in drops, agitating constantly, so that the reaction shall take place progressively, and the temperature shall not be raised too high. When the reaction is over, which is indicated by the disappearance of color, transfer the liquid to a wetted filter, and add the sugar.

100 parts of the product contain 1½ parts of bromine.—*Bull. Soc. Pharm. Brux.*

[A stronger syrup may be prepared in the same manner. — Ed. AM. DRUGG.]

Antiseptic Mouth-Wash.

DR. MILLER found that, by using the following mixture, he could completely sterilize the mouth, cavities in carious teeth, etc.

Thymol 4 gr.
Benzoic Acid.....45 gr.
Tincture of Eucalyptus. 8½ fl. dr.
Water.....25 fl. oz.

The mouth is to be well rinsed with this mixture, especially just before going to bed, since most of the damage by fermentative and putrefactive processes in the mouth is done at night, during sleep, unless the exciting cause be previously removed or

rendered inert.—After *Deutsch. Med. Wochensh.*

Toughening Paper.

A PLAN for rendering paper as tough as wood or leather has been recently introduced on the continent; it consists in mixing chloride of zinc with the pulp in the course of manufacture. It has been found that the greater the degree of concentration of the zinc solution, the greater will be the toughness of the paper. It can be used for making boxes, combs, for roofing, and even for making boats.—*Journ. Soc. Art.*

Permanent Indigo-Solution.

INDIGO solution is used as a reagent chiefly for nitric acid or chlorine. As usually prepared, it does not keep well, the indigo-carmin contained in it being gradually converted into indigo-brown. This change may be prevented by sterilizing the solution by means of boiling, and still more so by adding to the boiled solution about ¼ of sulphuric acid.—*Arch. d. Pharm.*, 223, 980.

Composition for a Nickel Bath.

WE give below a formula for a nickel bath, tried in several laboratories, which permits the deposit in a little while, and with a relatively weak electric current, of strong thickness of nickel upon metals:

Sulphate of Nickel..... 2 lbs.
Neutral Tartrate of Ammonium.26 oz.
Tannic Acid.....75 grains.
Water..... 5½ gals.

The neutral tartrate of ammonium is obtained by saturating a solution of tartaric acid with ammonia. The sulphate of nickel ought also to be neutral. Dissolve the whole in three or four quarts of water, and boil it for about a quarter of an hour. Then add sufficient water to make 5½ gallons. Then filter, and pour out. This bath can be made up indefinitely by adding the same ingredients and in the same proportions.

The deposit obtained is very white, smooth, and homogeneous, and although able to give a very considerable thickness, it produces no roughness on the surface, and does not scale off if the verdigris has been well cleansed from the pieces. By this process very good deposits of nickel are put upon rough or polished castings at a price not exceeding that of copper.—*La Nature*.

Oxidizing and Bronzing Iron.

A MELTING-POT, containing a mixture of saltpetre and a little peroxide of manganese, is put in a furnace (oven) to heat, until a shaving thrown on its surface takes fire. The articles to be bronzed, hung on hooks, are then plunged into this fused mass, and moved about in it until the desired color is obtained. Then they are lifted up and let drain, so that the saltpetre adhering falls back into the melting-pot. When they cool off to the temperature of boiling water, wash them, and plunge them into a bath of whale oil.

The result of these operations is the formation of a layer or setting of magnetic oxide of iron, which has a very beautiful color, and resists the action of dampness.

The saltpetre must be refined. The salt found commonly in the shops gives neither a satisfactory color nor uniform product. The metallic surface must be smooth, free from file cuts, but it must not be too polished. Treated in this manner, it takes a beautiful bronze color.

If the articles are clean, this process offers no danger of explosion. Should the melting-pot upset into the fire, the only production would be a slightly suffocating gas.—*La Nature*.

CORRESPONDENCE.

The Number of Apothecaries in the U. S. Navy.

Editor of American Druggist:

The number of apothecaries in the U. S. navy at the present time is about sixty.

They are rated as petty officers of the first class.

The salary is sixty dollars per month in all cases, except Annapolis, Md., Mare Island, Cal., and the Naval Dispensary at Washington, D.C., at which stations, by special act of Congress, the salary was made one thousand dollars per year.

They must be good pharmacists, so far as compounding prescriptions and the nature and actions of different drugs are concerned, understand minor surgery in cases of accident and there being temporarily no surgeon within reach, write a good legible hand, and be able to keep the books, except the medical journal, which is kept by the surgeon of the ship, except in rare cases, when a small vessel will have an apothecary in charge, when he must take care of everything appertaining to the medical department, at least until such time as the ship can reach medical assistance.

Apothecaries and bay-men, or nurses, will be selected by the senior medical officer with the approval of the commander of the vessel or station, and appointed to the position on taking the oath of allegiance to the United States.

This last paragraph is from the book of instructions for medical officers of the U. S. Navy. N. N.

Preventing Darkening of Elixir of the Pyrophosphate of Iron., etc.

To Editor American Druggist:

SIR:—In looking over the January number, I find that "J. D. C.," No. 1,636, is desirous to know how the darkening of the elixir ferri pyrophosphatis, etc., can be prevented. In lieu of the formulæ given by him, I would suggest the following formula of elixir of pyrophosphate of iron, quinine, and strychnine (which will be found in "Farrish's Pharmacy") as a substitute:

℞ Sulphate Quinia.... .60 grains.
Strychnia..... 1 grain.
Citric Acid 5 grains.
Stronger Alcohol 8 fl. oz.
Spirit of Orange80 minims.
Syrup 6 fl. oz.
Pyrophosphate of Iron, ½ fl. oz.
Distilled Water 7 fl. oz.
Water Ammonia..... q. s.

Triturate the sulphate of quinine, strychnia, and ac. citric together until minutely divided; then add the alcohol and spirit of orange, warm the syrup slightly, and add it to the turbid mixture, when, on stirring, the mixture becomes clear. To this add the pyrophosphate of iron, previously dissolved in the distilled water (warm), and finally, carefully add water of ammonia, drop by drop, until the elixir is perfectly neutral to test paper.

The finished preparation has a greenish-yellow color, which is permanent: an agreeable flavor of orange, and is highly palatable. I have for some time and often prepared the elixir in the above manner, and find it an excellent method. It does not turn black as the "elixir" discussed by "J. D. C." in your columns, but retains its original color and niceness. This I know from experience.

Ed. W. HAMBROCK.

SAN FRANCISCO, CAL.,
January 31st, 1886.

Cinchona Cultivation has been commenced in Guatemala. The plantations are at an altitude of 4,000 to 5,000 feet.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,668.—Carbolated Iodine (Subscriber, N. Y.).

A solution for "carbolate of iodine," for purposes of inhalation is the following, which is also known as *Boulton's Solution*:

Compound Tinct. of Iodine.... ℥ 48
Carbolic Acid, liquefied ℥ 6
Glycerin 1 fl. oz.
Water... 5 fl. oz.

No. 1,669.—Pyridine (Dr. McL.).

Pyridine has lately been recommended as a remedy in asthma by Dr. Sée, of Paris, but we have not been able to learn that it has been tried here. We believe there is none in stock at present, but should be glad to be corrected in this by some of our readers. Its cost, direct from the manufacturers in Europe, is about \$8 per pound, which would, of course, be very considerably increased by duty and other expenses. You can order it through any wholesale drug-house.

No. 1,670.—Pharmacy Laws (W. G.).

We published a list of the States in which pharmacy laws have been passed up to 1883, in our volume for 1884, page 118. Since then the Ohio law has been considerably amended, and new laws have been passed for the County of Erie, in New York State, and also for the State of New York, excepting the Counties of New York, Kings, and Erie. These laws will be found in full in the Proceedings of the Amer. Pharm. Assoc., 1884 (vol. 32), pp. 367-376.

No. 1,671.—Bookbinders' Glue or Paste (N. S.).

A very strong paste for pasteboard and other similar articles may be produced as follows:

4 parts of glue are soaked in 15 parts of cold water until soft. The mixture is gently warmed, until the solution is clear, and then mixed with 65 parts of boiling water. In another vessel, 30 parts of starch are mixed with 20 parts of cold water to a perfectly smooth paste, and this is gradually added to the solution of glue, which must be kept near the boiling point. When all is added, the heat is continued a few minutes longer and then withdrawn. The mass may be prevented from souring for some time by adding a little carbolic acid.

No. 1,672.—Oil of Peppermint (Consumer).

Fritzsche's test for pure oil of peppermint, not deprived of menthol, is as follows:

Mix thoroughly about one pint of snow or thoroughly crushed ice with a like quantity of finely powdered salt, and put this into any convenient open container (pot, measure, box, etc.) of the capacity of one quart. Into this place a corked test-tube not quite filled with the oil. After 10-15 minutes, the oil, if pure, will have become cloudy, translucent, thick, or of a jelly-like consistence. Then add 4 or 5 small crystals of pure menthol, recork and shake thoroughly. Replace the tube in the freezing mixture, and after a short time the pure oil will present a solid frozen mass of crystals. If the oil remain limpid or partially so, it has either been adulterated, or had its menthol extracted.

No. 1,673.—Spontaneous Combustion of Carboys containing Nitric Acid (W. A. W. & Co.).

Numerous cases are on record when carboys containing nitric acid, on being fractured from some cause, became ignited. Formerly it has been held that only the stronger acid is liable to produce this result, but recent experiments made by R. Haas (*Chem. Industrie*, 1885, 173) have shown that nitric acid of as low a spec. grav. as 29° B. or 1.250 (corresponding to about 40% of absolute nitric acid) may still produce ignition of dry hay, and an acid of 32° B. (spec. gr. 1.283) could still ignite dry straw. With a density of 23 B. (1.239) and 31° B. (1.271) respectively, only great heat but no flame was produced.

It is, therefore, advisable, to store all nitric acid of a density greater than 25° B. (1.208) in such a manner that an eventual fracture of the carboy may not lead to ignition.

No. 1,674.—Compound Tincture of Jalap (C. A. F.).

This preparation is official in the French Pharmacopœia. It has the synonyms: *Alcoolé de Jalap composé*; *Eau-de-vie allemand*; *Tinctura purgans*; and is prepared thus:

℞ Jalap. 80 parts.
Turpeth Root..... 10 "
Scammony (Aleppo).... 20 "
Alcohol 60% 960 "

Macerate the solids, properly comminuted, in a closed vessel during ten days, occasionally shaking. Then filter.

The turpeth is an East Indian drug, other names for which are turbeth, turbit, or the root of *Ipomœa Turpethum* R. Br. It is similar to jalap, but rougher in its action, according to Gray. Lindley says that the fresh bark of the root about six inches in length, and the size of a finger, is rubbed up with milk in India and used as a purgative. O'Shaughnessy made numerous careful experiments with the drug, and pronounced its action to be extremely uncertain. It is not likely to be had in this country.

No. 1,675.—Solution of Bimeconate of Morphine (S. S., Ohio).

This solution is official in the British Pharm., and was originally introduced with a view to supplying a solution of morphine such as was supposed to be its natural combination in opium. The formula is as follows:

Hydrochlorate of morphine.... gr. 9
Water ammonia (10%)..... q. s.
Meconic acid gr. 6
Alcohol (sp. gr. 0.838) fl. oz. ½
Distilled water..... q. s.

Dissolve the hydrochlorate of morphine in 2 to 3 drachms of dist. water, aiding solution by warmth, then add ammonia until morphine ceases to be precipitated. Cool, filter, wash the precipitate with dist. water until the washings cease to give a precipitate with nitrate of silver. Drain, mix the precipitate with sufficient water to produce 1½ fl. oz. Add the alcohol and meconic acid, and dissolve.

(One British fluidounce = 461 minims.)

One fl. oz. of this solution contains about 5½ grains (or about 1½ per cent) of bimeconate of morphine ($C_{17}H_{19}NO_8 \cdot C_4H_5O_2$). The solution, as regards meconate of opium, is about the same strength as tincture of opium.

Dose: 5 to 40 minims.

No. 1,676.—Peptonate of Iron (A.).

In a paper presented last year to the French Academy of Sciences (see *Comptes Rend.*, vol. 101, p. 321), Maurice Robin described some properties of a compound of peptone with ferric chloride and glycerin. If a solution of peptone (that is albumen rendered soluble by pepsin or other digestive fer-

ments) is mixed with a certain proportion of solution of ferric chloride, the resulting mixture still betrays the presence of iron by the usual reagents. But if glycerin be added to the mixture, and afterwards enough water of ammonia until the precipitate of ferric hydrate, which is first formed, is redissolved, a clear and transparent solution is obtained, which no longer gives any of the usual iron reactions. These are, however, revived as soon as the solution is acidulated with hydrochloric acid. The glycerin is a necessary constituent of the mixture before the ammonia is added. If glycerin is added after the ammonia, the precipitate will not dissolve. The solution of peptonate of iron thus produced may be injected into the veins, or mixed with any liquid of an alkaline character without being decomposed. It also dialyzes perfectly. Robin does not give any proportions, and it looks to us very likely that the omission of the proportions has been made purposely, so as to keep the manufacture and sale of the preparation in the hands of a monopoly. It is not the first time that this has been done, and notoriety for some article obtained by the presentation of some paper relating to it—but really giving no decisive information about it—before some scientific body.

No. 1,677.—Melting Point and Solidifying Point (E. R. W.).

It is a mistake to suppose that the melting and solidifying points of a fat are always so close together as you presume. If a certain fat should be solid at 38° F., and should have become liquid when gradually warmed to 40° F., it does not by any means follow that, when the fat is cooled again to 39° or 38° F., it will infallibly return to a solid state. There is a great difference, in this respect, among various fats. Some of them have the melting- and solidifying points actually close together; others again far apart; for instance: palm-oil, fresh, melts at about 86° F., and congeals again when cooled to about 70°. To render it fluid again, it must be reheated to 86° F. There is an intermediate period of sluggishness, which much resembles the condition of a supersaturated solution of a crystalline substance, during which molecular changes progress very slowly, until the *vis inertiae* is overcome by a considerable overstepping of the critical point. Time is an important factor in these cases.

If a long time can be given to a liquefied fat, at a perfectly uniform, lower temperature, it will be found that the difference between the melting and solidifying point is much less than when only a short time is spent upon the experiment. In the former case, the excess of heat which must become latent has ample time to be gradually absorbed. In the latter, the impatience of the experimenter is apt to overbalance the still existing amount of unabsorbed heat by artificial refrigeration, so that the thermometer registers, not the point at which the fat would have solidified in a natural manner, but the excess of refrigeration applied to hasten the result.

No. 1,678.—Sulphate of Sparteine (Dr. J. R. S.).

Sparteine is a liquid alkaloid discovered by Stenhouse, in 1850, in *Spartium Scoparium* L. (*Sarothamnus Scoparius Koch*; *Cytisus Scoparius Link*), the official scoparius or broom. Besides sparteine, he found in it a neutral principle, which he named scoparin. Sparteine was further studied by Mills, in 1861, and is best prepared in the following manner: Broom is extracted with water containing sulphuric acid, the extract concentrated and then distilled with caustic soda. The distillate is neutralized with hydrochloric acid,

the solution evaporated in the water bath to dryness, and the residue distilled with solid caustic potassa. The crude base thus obtained is purified by rectifying it over metallic sodium in a current of hydrogen. It is a liquid boiling at 288° C. (550.4° F.) is very little soluble in water, heavier than the latter, has a faint aniline-like odor, and a very bitter taste. It is strongly alkaline and forms crystalline salts with acids.

The sulphate of sparteine made by chemical manufacturers is probably not made from the pure alkaloid, but is most likely prepared by several crystallizations of the first distillate neutralized with sulphuric acid. In the manufacturers' lists, in Germany, the sulphate of sparteine has been quoted as about 1 mark per gramme, but we understand that the sudden demand for it has advanced the price considerably. The sulphate of sparteine is quite soluble in water, and has been reported by M. Germain Sée to be a safe and certain cardiac tonic, in certain respects superior to digitalis and convallaria. Sée has administered it in doses of 0.10 Gm. or about 1½ grain. An editorial on its medical properties may be consulted in *The Medical Record* of Jan. 16th.

No. 1,679.—Oleate of Manganese (C. A. G.).

As already stated by H. B. Parsons, in his paper on oleates, abstracted on page 24 of our volume of last year, oleates may be readily prepared by double decomposition between some metallic salt and the most readily obtainable commercial oleate of sodium, namely, white Castile soap (Conti's), which is sufficiently pure for all practical purposes. In order to ascertain the proper proportions, however, either dried or powdered castile soap should be taken, or the amount of water should be estimated in a sample of the soap, and allowance made for it. The molecular quantities of the two substances required are as follows:

MnSO ₄ .4H ₂ O	+	2NaC ₁₈ H ₃₅ O ₂
222		608
222		608
222		608

and the products are oleate of manganese (616), sulphate of sodium (142), and water (72).

To make 1 pound of the oleate of manganese there are required, theoretically, 2,523 grains of crystallized sulphate of manganese, and 6,907 grains of pure oleate of sodium. But to allow for slight impurities in the soap, and as it is always best to use an excess of the metallic salt, the following practical proportions may be used:

Sulphate of manganese, cryst.... 5 av. oz.
Dry white Castile soap..... 13 av. oz.

Dissolve the sulphate of manganese in 28 pints of water, and the Castile soap, by the aid of heat in 16 pints of water. Pour the latter solution gradually into the former, warm the mixture until the oleate separates, then wash it with warm and afterwards with a little cold water, express the excess of moisture, and transfer the product to proper vessels.

It is white or whitish, and becomes rather hard. To render it more pliable, it may be mixed with petrolatum, by the aid of heat.

No. 1,680.—Darkening of Elixir of Phosphate Iron, Quinine, and Strychnine (Jas. W.).

This correspondent says: "I notice that a certain manufacturer's elixir of phosphate of iron, quinine, and strychnine has been reported, on the basis of an analysis, to contain no phosphoric acid at all, and the beautiful green color is attributed to citrate of potassium. I added a quantity of this salt to my elixir (made after the for-

mula given in the U. S. Dispensatory) and after a short time, a beautiful crystalline clustered precipitate was the result." The correspondent asks what this precipitate could have been, and how a permanent elixir, preserving its color, could be made.

Regarding the precipitate, we could only make a guess, since we are a little in doubt as to the precise formula meant by our correspondent. But with reference to his second query, we can furnish him some information placed at our disposal by another of our readers, which will be of interest to many others. His letter will be found under "CORRESPONDENCE."

No. 1,681.—Alabama Pharmacy Law (T. C. A.).

There is a law in Alabama regarding the sale of poisons, which you will find quoted in the report of the Committee on Legislation of the American Pharm. Assoc., Proceedings, vol. 30, p. 480.

There is also a pharmacy law which requires all druggists in the State to obtain a license to deal in drugs from some medical board in the State, or from the Medical College of Alabama. See the text of the law in the same vol., same page.

For exact information as to how the law is executed, and to whom and at what time application should be made for a license, we would suggest that you write to some pharmacist in Alabama. You might consult the list of members of the Am. Ph. Assoc. from that State, which is given in the appendix to the Proceedings.

No. 1,682.—Diuretic Elixir of Buchu, Juniper, and Acetate of Potassium (L. F. M.).

We must not be understood, when supplying working formulas for preparations such as our correspondent here asks for, as if we regarded these polypharmaceutical cornucopias worthy of indorsement. We recognize the fact, however, that many of our readers often find themselves cornered by an inquiry after such preparations, which they feel under obligation to furnish, though they, themselves, may be of our way of thinking. We make these remarks here because the preparation wanted by our correspondent belongs to that class of remedies which should not be taken promiscuously, a great deal of harm being often done by such "diuretics." However, here is a formula from one of our files:

Fl. Ext. Buchu.....	1½ fl. oz.
Fl. Ext. Juniper Berries....	½ fl. oz.
Acetate Potassium.....	512 grains.
Simple Elixir, to make.....	16 fl. oz.

Dissolve the acetate of potassium in the simple elixir, add the two fluid extracts, shake well, and filter after some time.

Of course, a portion of the useful constituents of the two fluid extracts are insoluble in the simple elixir, which generally contains only about 25 per cent of alcohol, and are lost by remaining on the filter.

No. 1,683.—Prescription Difficulty (H. C. T.).

This correspondent wants to know what we think of the following prescription, and whether there is a way to make a clear solution of it without changing the properties of the salts:

R Ammonii Carbonatis.....	3 ss.
Quinina Sulphatis.....	gr. xxiv.
Spir. Ætheris Nitr.....	fl. 3 ij.
Syrupi.....	fl. 3 i.
Tinct. Veratri vir.....	gtt. xij.
Aque destill.....	ad. fl. 3 ij.

M. S. Dose: 1 teaspoonful every three hours.

As the prescription is written, it is evident to us that the prescriber contemplated to obtain some direct beneficial effect from the carbonate of ammonium *as such*; a combination of

this salt with spirit of nitrous ether being, by no means, an unusual feature in treating certain affections of the respiratory organs. To use an acid for dissolving the quinine salt, therefore, would be doubly wrong. First, because it is not ordered, and secondly, because it would make the employment of the carbonate of ammonium useless.

On the other hand, the carbonate of ammonium is chemically incompatible with the tincture of veratrum viride in presence of water, since the alkaloids of the veratrum are liberated and cannot be retained in solution in an aqueous menstruum. Of course, the same incompatibility exists with reference to the quinine salt. But as this is not capable of being sensibly dissolved in the liquids ordered by the prescription, it makes no difference whether the ammonium salt is added or not.

The chemical incompatibility, however, above alluded to, does not render the combination inert. All that is required is to shake the mixture thoroughly every time it is used, and for this purpose a "shake" label ought to be affixed. The preparation cannot be rendered clear by any possible device without altering its legitimate function, and it should, therefore, be dispensed as a mechanical mixture.

No. 1,684.—Liquid Glue (W. M.).

From the formulæ we have on file we select the following, the first of which we ourselves have found to answer very well.

1. Dissolve 1 part of glue (or gelatin) in 4 parts of acetic acid by the aid of heat. At ordinary temperatures this is semi-solid, but may be rendered liquid by placing the vessel containing it into hot water.

2. Soak 8 oz. of best glue in 8 fl. oz. of water, in a wide-mouthed bottle, and melt it by placing the bottle in a water-bath. Then add, slowly, 2½ fl. oz. of nitric acid, spec. grav. 1.330, constantly stirring. Effervescence will take place, and nitrous vapors will be given off. When all the acid has been added, transfer the liquid to suitable bottles and cork it well. It does not gelatinize, and is ready at any moment.

3. Take 8 parts of best white glue, or transparent gelatin. Break it up fine and soak it in water until soft. Then pour off the excess of water, melt it on a water-bath, and add 1 part of glacial acetic acid. If required denser, the melted glue may be heated on the water-bath under constant stirring, until a portion of the added water has evaporated.

4. Another authority gives the following modification of the process mentioned under 2. Break 500 parts of the best glue into small pieces, cover them with 670 parts of water, and allow to soak until the glue is soft and nearly all the water has been absorbed. Pieces projecting above the surface of the water must be pushed under. Then melt the mass in a glass or porcelain vessel on the water-bath, and add from 75 to 83 parts of commercial nitric acid, spec. grav. 1.380, very slowly and with constant stirring. When using a weaker acid than that just mentioned, it may happen that the mixture gelatinizes on cooling. In this case, the mass must be remelted and more acid added. But it is better to wait a few days before doing this, as the glue sometimes liquefies of its own accord. Too much acid makes the glue too thin and destroys its adhesive properties.

No. 1,685.—Euphorbia Pilulifera (M. S. B.).

This Euphorbia is a native of Queensland (Australia), and is also found in certain portions of the East Indian Archipelago, particularly Java. It is also reported to occur in South America, being called *caiaçcia* by some native tribes in Brazil, and *erva dos cobras* ("snake-herb") by the Portuguese

(*Rosenthal*, Synopsis Plant. Diaphor., 8vo, Erlangen, 1862, p. 811). It has been formerly reputed to be a diuretic, and is said to have been used in Brazil and the West Indies as a remedy in snake-bite, while in the East it is used against apthæ.

Marset and Levison have more recently studied the drug, and found it to be a gentle stimulant and narcotic, of particular benefit in asthma, emphysema, and chronic bronchitis.

The dose of the drug, either dry or in form of fluid extract, is given as 1 to 4 fl. drachms.

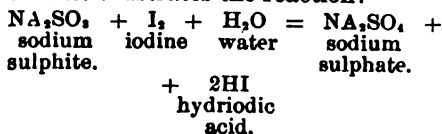
No. 1,686.—To Harden Plaster of Paris Casts (Inquirer).

Plaster of Paris may be caused to set more quickly if some alum be dissolved in the water used for rendering it plastic. If the gypsum is first moistened with a solution of alum and then again burned, the resulting compound sets very quickly and becomes as hard as marble. Borax may also be used. In 1877, the Prussian Government awarded three prizes for inventions, submitted at its invitation, of processes for hardening plaster casts. The principle of all of these consists in this, that the objects are to be treated with a solution of caustic baryta. But it has been found that, no matter how deep this penetrates, the baryta is again drawn toward the surface when the water evaporates, a portion efflorescing on the outside, and only a thin layer remaining in the outer shell where it is converted into carbonate. This, at the same time, stops up the pores, rendering it impossible to repeat the operation. It has now been ascertained by M. Dennstedt, that the whole mass of the cast may be hardened by applying to it, with a brush made of glass-bristles, a hot saturated solution of baryta. To prevent the separation of crystallized baryta at the surface, the object must be raised to a temperature of 60–80° C. (140–176° F.). But, to produce good results, it is necessary to add to the plaster, before casting, certain substances with which the baryta can combine. These are silicic acid in some form, or the sulphates of zinc, magnesium, copper, iron, aluminium, chromium, cobalt, nickel, cadmium. With some of these, the resulting object will be colored. As it is, however, difficult to ensure the production of a uniform tint, it is better, when employing salts producing color, to mix the plaster with about 5 per cent of quicklime, or better, to render it plastic with milk of lime, and then to soak the object in a solution of the metallic sulphate. (Compare Dennstedt's paper in the *Ber. d. Deutsch. Chem. Ges.*, 1885, 3, 314.)

No. 1,687.—Decolorized Tincture of Iodine (T. W. G.).

This correspondent writes: "I frequently use decolorized tincture of iodine, and employ sulphite of sodium for this purpose. Will you kindly inform me what chemical change takes place, and to what extent the alterative effects are impaired?"

On adding to a solution containing free iodine enough sulphite of sodium (or any other sulphite) to discharge the color of the iodine, the following scheme illustrates the reaction:



That is, the sulphite of sodium, in presence of water and iodine, will become oxidized, taking its oxygen from the water, while the free iodine will unite with hydrogen, forming hydriodic acid.

A simple tincture of iodine is neutral in its reaction (though, of course, it would not do to use litmus paper as a criterion, since this would be merely stained red and afterwards bleached). Sulphite of sodium and water are likewise neutral in reaction, though the former always, as it were, looks for oxygen and, therefore is prone to exert a bleaching action. But when the three substances are brought together, the result is a neutral substance (sulphate of sodium), and an acid which is more or less irritating, according to its concentration. Now if hydriodic acid were as stable as hydrochloric, or even as hydrobromic, it might do more damage. But it does not long remain unaltered. When it is once formed, and no matter whether it is concentrated or dilute, the oxygen of the air soon begins to affect it, by combining with some of its hydrogen to form



Hostess: It seems so odd, Sir; you are so young and yet a Doctor.
Young Doctor: Yes, Madam, it does; but you must know I only attend very small children as yet.—*The Idler.*

water, setting a corresponding amount of iodine free. Hence a tincture of iodine, decolorized as above stated, though colorless when applied to the skin, may produce more or less of a stain; or, at all events, it may set some of the iodine free during the process of absorption, so that the specific effect of the iodine is not altogether interfered with. But it is quite certain that a decolorized tincture of iodine, no matter how prepared, has a more or less different action from one which is not decolorized.

No. 1,688.—Borocitrates (M. J.).

The so-called borocitrates form a class of salts which have a prompt laxative property and are very pleasant to take. Some of them, as the magnesium salt, have also been highly recommended as solvents for urates, in lithiasis, having been found preferable even to lithium salts in this respect, by some observers. According to Hager, better results might be expected, at least theoretically, from the ammonium salt, as the ingestion of the magnesium introduces one of the very agents which is apt to be the cause of very obstinate calculi (triple phosphates).

The borocitrates of ammonium, magnesium, and sodium may be prepared thus:

1. Borocitrate of Ammonium.

Ammonium Carbonate.....	gr. 1,500
Citric Acid.....	gr. 2,500
Sodium Borate.....	gr. 2,000
Water to make.....	fl. oz. 31

Dissolve.

The 2,000 grains of citric acid require for saturation, theoretically, 1,495 grains of carbonate of ammonium. The resulting product, reckoned as dry citrate of ammonium (NH₄)₂C₆H₅O₇, will amount to 2,485 grains. The citric acid is taken in excess.

The above solution, therefore, contains in each fluidrachm

10 grains of citrate of ammonium, and about 8 " " borax.

2. Borocitrate of Magnesium.

Magnesium Carbonate.....	gr. 1,000
Citric Acid.....	gr. 2,000
Sodium Borate.....	gr. 2,000
Water to make.....	fl. oz. 52

Dissolve the citric acid in 6 fl. oz. of water, add the magnesium carbonate and borax, and when solution has taken place, make up the volume to 52 fluidounces.

The above formula orders a considerable excess of citric acid. But it is customary to do so. Frequently, also, the salt is required dry. In this case, instead of adding water when solution has taken place, the liquid is evaporated, then spread upon plates of glass or porcelain, and dried.

The quantity of citric acid necessary to neutralize 1,000 parts of commercial carbonate of magnesium would be about 1,410 parts of citric acid, more or less, depending on the amount of water in the former.

The resulting solution, prepared by the above formula, contains in each fluidrachm about 5 grains of citrate of magnesium reckoned as anhydrous.

3. Borocitrate of Sodium.

Sodium Bicarbonate.....	gr. 2,000
Citric Acid.....	gr. 2,000
Sodium Borate.....	gr. 2,000
Water to make.....	fl. oz. 54

In this preparation, the citric acid is likewise in excess. 2,000 grains of it requiring 2,456 grains of the bicarbonate.

The solution contains about 10 grains of citrate of sodium in 1 fluidrachm.

The dose of any of the above salts may be varied, according to circumstances, up to about 90 grains per day, of the dry salt.

It is best administered with a little bicarbonate of sodium, so as to produce an effervescent solution, and flavoring may be added, when desired.

No. 1,689.—Journal for Soap Industry (T. P. W.).

The *Oil and Colorman's Journal*, published at 19 Ludgate Hill, London, E. C., England, 7s. 6d. per year, devotes considerable space to the manufacture of soaps. We know of no journal in the English language which is exclusively devoted to this subject.

Queries Referred to our Readers.

(If any reader is in possession of information regarding any of these subjects, he will oblige us by furnishing the same.)

1. What are the principal ingredients in Easton's Imperial Piano and Furniture Polish?

2. Singleton's Eye Ointment.

The Cinchona Trees of all ages now under cultivation in the Wynad district (S. W. India) number 5,000,000.

American Druggist

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Whole No. 142.

COCA.*

THE GENUS ERYTHROXYLON.

THE family of *Erythroxyleæ* was established by Kunth, in 1824.† The genus *Erythroxylon* was first described by Patrick Brown, in 1756, under the individual *Erythroxylon areolatum*.§

The members of this family are shrubs or trees which have, among other characteristics, that of possessing a reddish wood (whence the name).

The species of the genus *Erythroxylon* have been differently grouped in classes by different authors.

De Candolle distinguishes two classes, according to the characters of the leaves, viz., Penninervia and Areolata, the latter of which are distinguished by two lateral ribs, running almost parallel to the main-rib and running in a curve over the secondary ribs. Martius divides them into two sections, according to distinctions in the flowers. Peyritsch (in Martius, *Flora Brasil*.) adopts in the main the classification of Martius, but superadds the characteristics of the leaves as decisive motives.

So far as the existing literature shows, only a few species are used medicinally or in the arts.

The very dense wood, as well as the bark of several species, which yields a reddish-brown dye-stuff soluble in water, are employed for technical purposes. The leaves, buds, bark of the trunk and root, and the scarlet fruits have been used in medicine.

ERYTHROXYLON COCA, Lam.

This species of *Coca*, particularly interesting at the present time, has been called by a variety of names, of

which the following list given by the author is believed to be as complete as it can be obtained at present:

Spanish: Coca.

Peruvian: Cuca.

Guarigian: Hayo.

Brazilian (native): Ypadú.

Other names, given by European authors are: *Coca Peruvianorum* (Johnston); *Coca Peruina* (Hernandez); *Coca occidentalis* (Fragoso); *Coca herba* (Benzon); *Hierba Cuca* (Ortega); *Myrto similis Indica* (Bauhin); *Erythroxylum Peruviano*

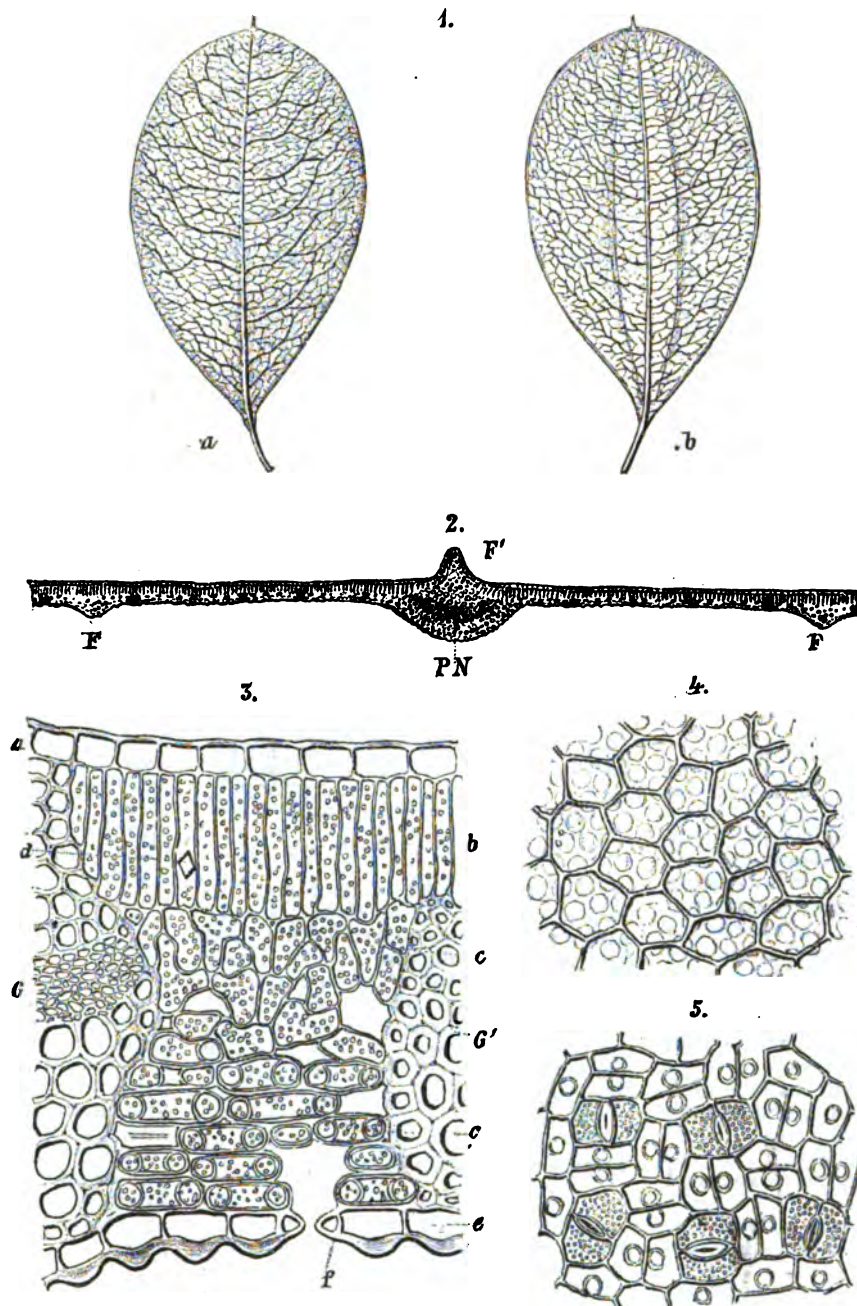
our abstract of the chapter on the pharmacognosy to this place.—Ed. AM. DRUGG.]

PHARMACOGNOSY.

Commercial coca leaves are oblongly ovate or obovate, 3 to 8 Cm. ($2\frac{1}{4}$ to $3\frac{1}{4}$ inch) long, 2 to 4½ Cm. ($\frac{1}{4}$ to $1\frac{1}{4}$ inch) broad, and have a thin stalk, about 4 to 5 Cm. ($1\frac{1}{4}$ to 2 inch.) in length. They are pointed at both ends, or only at the base, at the apex rounded off, blunt or slightly indented, and always

provided with a small, short, projecting point, which is often found broken off; margin entire, quite thin, revolute, stiff and brittle. The upper surface is olive-colored, the under surface is yellowish or grayish-green; both sides are dull, glabrous, and covered with a very thin waxy coating.

Upon the lower surface, the main rib appears very strong and prominent, running to the apex of the leaf. From this main rib arise, almost at right angles, more or less prominent secondary ribs, which appear, however, more prominent on the upper surface than upon the lower. The less prominent secondary ribs resolve themselves, immediately beyond their point of origin, into numerous, fine, polygonal, anastomosing meshes; but the stronger ones run in a curve to about the middle or outer third of the lamina, and then fork out in such a way that the upper branches of the lower ribs combine with the lower branches of the next higher ones. Further ramification takes place inside of these spaces, so that the leaf, when viewed by transmitted light, appears to be divided into



Structure of Coca Leaves.

FIG. 1. Coca Leaves. a, Upper surface. b, Lower surface with the two characteristic folds. 2, Cross-Section, enlarged 20 diameters. 3, Vertical Section of the Leaf, enlarged. 4, Horizontal View of Epidermis of Upper Surface. 5, Horizontal View of Epidermis of Lower Surface.

rum (Prescott); *Erythroxylum peruano con hojas ovales y drupas de seis angulos* (Unanué); *Peruvian Tobacco* (Calkins).

[The botanical description of the tree and its organs is omitted by the author and also by us. We have transposed

the following authorities may be consulted: v. Martius, *Beträge zur Kenntniss der Pflanzengattung Erythroxylon* in *Abh. d. K. Bayer. Akad. d. Wiss.*, III. (München, 1843), pp. 281, 410. Also the *Erythroxylaceæ* by Joh. Peyritsch, in *Flora Brasil*, fasc. 81 pp. 126-180.

* Abstract of selected chapters of a pamphlet entitled: Das Cocablatt. Eine pharmakognostische Abhandlung von Dr. Josef Nevinny, Assistent an der Lehrkanzel für Pharmakologie und Pharmakognosie an der K. K. Universität in Wien. 8vo. Wien, 1886. (With plates.) (With the sanction of the author.)

† Kunth, *Nova genera et species plantarum*. V. According to him, the family comprises the two genera *Erythroxylon* and *Sethia*, which are frequently combined in one genus.

§ This has also been classed among the Malpighiaceæ (Lindley), Malpighineæ (Martius) and Linneæ (Bentham and Hooker).

¶ Regarding the botanical characters of the genus,

innumerable, very small, polygonal fields.

The lower surface of by far the largest majority of the leaves exhibits a very characteristic feature. At either side of the mid-rib, there extends from the base to the apex, in a flattened curve, distant at its furthest point from the main rib only $1\frac{1}{4}$ to 2 Mm., a fine line, which, on first appearance, looks like a tender lateral rib, but, on closer examination, is found to run

continuously along the surface over the deeper situated cross-ribs.

According to P. Brown, Martius, and other observers, these lines or stripes are simply folds caused by the pressure brought by the edges of the leaves (while rolled in the bud) against the nerves.

Fig. 2 shows the characteristic folds, as well as the anatomical structure of the leaf in cross-section, under a magnifying power of 20 diameters.

The epidermis of the upper surface, viewed in horizontal section (Fig. 4), consists of irregularly polygonal, colorless cells, which are nearly rectangular in cross-section (Fig. 3, a). Below these cells are seen the circular outlines of the palisade-cells (Fig. 3, b). The epidermis of the lower surface (Fig. 5), viewed horizontally, likewise presents irregularly polygonal, but more narrow cells, with the outline of a double-walled circle either occupying the middle of the cell or adhering to one side of the cell-wall. These circles are nothing more than a papillous projection of the strong walls of the cells seen in Fig. 3, e, which otherwise much resemble the epidermis cells of the upper surface. The very numerous stomata (Fig. 3, f, see also Fig. 5) are arranged in groups, very small, situated at the same level as the epidermis-cells, and communicate with a roomy air-space.

The palisade parenchyma (Fig. 3, b) contains much chlorophyll, a variety of tannic acid coloring ferrous salt green, and occasionally some crystals of calcium oxalate (Fig. 3, d).

Next follows the cortical parenchyma (Fig. 3, c), composed of irregularly combined cells, containing a much smaller quantity of chlorophyll, and now and then some crystals of oxalate of calcium, with a very small quantity of tannin. Only in very young, fresh leaves could minute drops of a yellow ethereal oil be noticed.

[The minute anatomy, very carefully given by the author, does not present any very remarkable features, and is therefore omitted here. — ED. AM. DRUGG.]

POSSIBLE SUBSTITUTIONS.

Though no proof can at present be adduced that any of the following have actually been used as fraudulent substitutes for the genuine coca leaf, yet the author thinks it not impossible that such an attempt might be made some time or other, and therefore enumerates certain other species of *Erythroxylon*, the leaves of which are more or less similar to those of the genuine coca. Such species are:

1. *E. lineolatum* D. C. Leaves elliptical, lower surface sea-green.
2. *E. areolatum* Jacq. Leaves obovate, or oblongly obovate, emarginate at the apex.
3. *E. cataractorum* Spr. Leaves elliptical, pointed at the base, rounded at the apex.
4. *E. panamense* Turcz. Leaves lanceolate or oblongly-lanceolate, narrowed at both ends.

The leaves of *E. mexicanum* H. B. K., *E. rigidulum* D. C., and *E. cassioides* Pl. et Z. show the same lateral lines as the true coca and the preceding leaves, but are distinguished by their more or less leathery quality.

E. Mamacuca Mart. has thin, elliptical and pointed leaves, $2\frac{1}{2}$ to 9 inches long. Those of *E. microphyllum* St. Hil. are only 2-3 Cm. ($4\frac{1}{4}$ inch) long, coriaceous, oval, and slightly contracted at the base.

None of the preceding have so far been chemically examined. It remains to be seen whether any of them will turn out to contain cocaine.

[To be continued.]

[NOTE.—In our last number, the word Coca has been misspelled, in the title, "Cocaa." This is, of course, the printer's blunder, and not ours.—ED. AM. DR.]

The Specific Gravity of Commercial Glycerin.

From a paper on the "Examination of Commercial Glycerin," by H. L. Sulman and E. E. Berry, in *The Analyst* (January, 1886), we abstract the following regarding the specific gravity of glycerin:

The specific gravity of glycerin appears to be a subject upon which some amount of doubt exists, the values assigned to it by different authorities differing considerably. It is usually assumed to be 1.260, but this figure is undoubtedly too low, more trustworthy determinations placing it nearer 1.270. Champion and Pellet give it at 1.264 at 15° C.; Vogel, Fuchs as 1.266 (the value adopted by Allen in his "Commercial Organic Analysis"); Fabian places it at 1.261 at 17.5°, which, assuming the coefficient of expansion of glycerin to be 0.0006, gives 1.263 at 15° C.; Chevreul, Schweikert, assign 1.267; and Lenz, at 13° C., the figure 1.2691 (adopted by Roscoe and Schorlemmer), which would be 1.2675 at 15° C., and it is this figure, confirming, as it does, the independent determinations of Chevreul and Schweikert, which we prefer to take; and experience having shown that it is quite possible to obtain twice distilled glycerin in a high degree of purity, with a density of 1.267 and

FIG. 1.

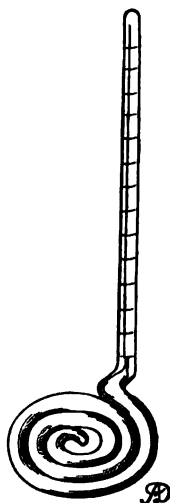
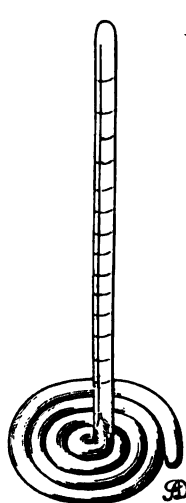


FIG. 2.



Rice's thermometer.

slightly over, Lenz is, as far as we have been able to ascertain, the only authority who has controlled his final results by combustion. The lower values obtained by other chemists are readily explained by the very great difficulty experienced in driving off the last one or two per cent of water from otherwise pure glycerin without effecting slight decomposition, and producing colored products. Substituting the above chosen value in Vogel's well-known formula:

$$\frac{1267.5 - 1000 D}{2.875 D}$$

where D is the observed gravity, the percentage of glycerin in aqueous solution may be ascertained with approximate accuracy.

The specific gravity of commercial samples does not necessarily indicate whether the glycerin is crude or distilled, although, as a rule, the former article, often heavily charged with salts, albuminous and other organic matter, is considerably higher in gravity than the distilled. The crude glycerin from soap leys may be boiled down to 1.300, 1.320, and even to 1.360, but the glycerin from candle factories, obtained by the lime saponification, or by the sulphuric acid process, is always lower than this. Commercial distilled glycerin is rarely met with above 1.261. It may be worth mentioning that the gravity of glycerin as shown by the hydrometer is generally two or three degrees too high.

[ORIGINAL COMMUNICATION.]

A NEW FORM OF THERMOMETER.

BY CHARLES RICE.

SOME years ago, while making a series of experiments involving the taking of the temperature of a small volume of liquid contained in small capsules or beakers, I found it impossible to obtain reliable results with the usual long stem thermometers, and I experienced great difficulty in obtaining a trustworthy thermometer with very short stem, so as to permit at least the larger portion of the mercurial column or the whole bulb to be immersed in the liquid. It occurred to me then, that for the purpose above mentioned, as well as for many other uses, a modification of the shape and position of the bulb of the thermometer would be a useful improvement. Thermometers in which the bulb consists of a coil of tubing filled with mercury have long been in use for ordinary and domestic purposes. It only remained to give another direction to the stem so that it would stand upright when the coil was placed on a flat surface. A considerable number of these thermometers (not graduated) were made by the manufacturer at that time, to be kept in stock for future use, and to allow them to season. One of them, now three years old, has recently been graduated for me, and the graduation examined by the Thermometric Bureau of the Observatory of Yale College. The differences from true temperature, ascertained for each separate degree, are quite small, and not more than are to be found in all good thermometers. It fulfils all the conditions it was designed for, though a still further improvement is in contemplation, namely, to cause the stem to arise from the centre of the coil, instead of from the outside, which will diminish the diameter of the coil. The thermometer graduated for me has a stem of six inches in length, and a coil of two inches in diameter. It is graduated from 32° to 120° F. The thermometers of this shape, thus far made, are not intended for temperatures beyond about 125° F., though they could be made to run as high as others should there be any demand for them. The fact that they will stand upright of their own accord makes them very useful in many operations. Accompanying this paper is an illustration of the thermometer. The manufacturer is Giuseppe Tagliabue, of New York.

A New Element.

THE discovery of a new non-metallic element is announced by Mr. C. Winkler (*Berichte*, XIX., 210), for which the name "germanium," and the abbreviated symbol Ge, are proposed. The new metalloid is said to have been found in a mineral from Freiberg, known as "argyrodite" rich in silver. Further particulars of the discovery are promised in another communication.

Lanolin.—This is a name applied to a fatty substance extracted from the natural wool-grease or suint, and intimately mixed with about 20 per cent of water. Jaffé and Darmstädter of Charlottenburg, near Berlin, lately succeeded in working out a process by which the difficult problem of purifying wool-grease has been practically solved. One of the products obtained was found to be, when pure, absolutely neutral, unsaponifiable, and having the remarkable property of being able to take up over 100 per cent of water, forming a very soft vehicle for applying remedies.

As put on the market, lanolin already contains 20 per cent of water. It is a yellowish-white mass of the consistence of simple ointment.—*Pharm. Centralhalle*, No. 46.

(ORIGINAL COMMUNICATION.)

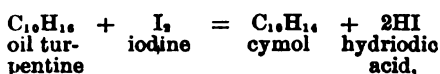
ON TEREBENE, TERPENE, TERPIN, AND ALLIED BODIES.

WE have received a number of inquiries from correspondents regarding several members of the turpentine group of chemicals which have lately been recommended in medicine. The statements made by our correspondents, as well as the indiscriminate method of spelling the terms inquired about, convinces us that there is a great deal of confusion existing regarding the nature of these bodies. Indeed, we have reason to know that there is even a good deal of confusion among medical authors in this respect, since we have seen one and the same substance called by two or three different names in different articles contained in one and the same journal. But there is not only confusion among some of the recent medical writers, and the average readers of pharmaceutical and medical journals, but there has even been some confusion among the authorities who have studied the subject, and who have recorded the results of their experiments, as may be seen by the not infrequent occurrence of contradictory figures or observations attributed to apparently the same substance by different observers. To some extent this may be owing to the circumstance—pointed out to us by a friend residing in the midst of the turpentine districts, and making a special study of the products—that some investigations were not started from absolutely certain premises, the experiments being perhaps performed with products of different origin or mode of preparation than had been reported to the experimenter. It is to be hoped that a renewed study of the products, on the spot, by a competent authority, will clear up some of the doubtful points.

Among the organic hydrocarbons there is a series distinguished by the generic name:

Terpenes, which have the composition $C_{10}H_{16}$, or a multiple of this, and are sometimes also called *camphenes*.

These may be considered as addition-products of hydrocarbons of the aromatic or benzol series, the close relationship being, among other proofs, shown by the fact that, when iodine is made to act upon oil of turpentine, the products are, almost quantitatively, cymol and hydriodic acid



Terpenes have the faculty of uniting directly, that is, of forming addition products—with halogen acids as well as with water. They are also very easily polymerized, that is, condensed to multiple molecules, each containing two or more of the simple molecule $C_{10}H_{16}$ —either by heat alone (under pressure), or by the intervention of certain reagents, such as sulphuric acid, boron fluoride, etc.

The word *terpene* is used as a generic term to denote any one or all the members of this class of bodies.

It is not used, as such and by itself alone, to denote any individual terpene; but in association with other words—terpene hydrate, terpene chlorides, terpene mono-, di-chloride, etc.—it designates special individuals.

The word *camphene*, on the other hand, though it has been and is even at present sometimes employed in a generic sense, equivalent to terpene, is at the same time specially applied to a particular kind of terpene, as will be seen directly. For this reason, it will be best to abandon the generic use of the term *camphene* entirely.

To facilitate the explanation of the subject, the following scheme is inserted here, which exhibits the more

important members of this group and their derivatives, together with their relations:

Terpenes: $C_{10}H_{16}$, or $(C_{10}H_{16})_x$

A. *Natural Terpenes*.

terebenthene { from oil of turpen-
australene } tine
(and others).

B. *Artificial Terpenes*.

camphene (and terebene)
colophene
(and terpenes from many volatile oils: cajeputene, cedrene, menthene, etc., etc.).

C. *Derivatives of French Oil of Turpentine (terebenthene) only*.

terpene hydrate.

D. *Derivatives of any Variety of Oil of Turpentine*.

terpene hydrochloride

terpin hydrate

terpin

terpinol

terpinene

terpilene (terpinylene).

1. *Oil of Turpentine*, the most abundant source of terpenes, is obtained by the distillation of turpentine, the naturally exuding balsam or oleo-resin of coniferous trees.

There are two chief varieties:

a. The *lævogyre*—turning the plane of polarized light to the left.

Of this kind is the French oil of turpentine, obtained from *Pinus maritima* Poiret (= *Pinus Pinaster* Solander). The boiling-point of this oil is 155° C. (311° F.), and the spec. grav. 0.8749 at 0° C. (32° F.).

The oil of turpentine distilled from Venice turpentine, the product of *Larix europæa* D. C., and that obtained from Canada balsam, derived from *Abies balsamea* Marshall and allied species of *Abies*, are likewise *lævogyre*. But the latter is not a commercial product, and the former is not common.

b. The *dextrogyre*—turning the ray of polarized light to the right.

Of this kind is all that is produced in the United States, from *Pinus Tæda* L., and *Pinus australis* Michaux (= *Pinus palustris* Miller). Also all that is distilled in Russia, Sweden, and elsewhere from *Pinus silvestris* L.

There are also varieties of oil of turpentine which are compounds of the two preceding.

Most Russian oil of turpentine, which is chiefly derived from *Pinus silvestris* L. and *Pinus Ledebourii* Endlicher, (*Larix sibirica* Ledebour) is composed of a very large proportion of *dextrogyre* (boiling at ab. 171° C. = 339.8° F.) mixed with a little *lævogyre* (boiling at 157° C. = 314.6° F.) oil of turpentine. It is not known what may be the cause of this. But it appears probable that it is due to the simultaneous presence of turpentines derived from different species of *Pinus*, when the oil is distilled off. A correct knowledge of this question can only be obtained by examining absolutely authentic samples of the several turpentines.

Scotland also produces some oil of turpentine, composed to about $\frac{1}{2}$ of a *dextrogyre* and $\frac{1}{2}$ of a *lævogyre* portion. The former boils at 156°–159° C. (312.8°–318.2° F.); the latter at 171° C. (339.8° F.).

So-called German oil of turpentine is almost exclusively produced in Russia, though small quantities are made here and there in Germany from *Pinus silvestris* L., *Pinus nigra* Link, *P. rotundata* Link, and *Pinus Abies* L. In Austria, some oil of turpentine is also made from *Pinus Laricio* Poiret, but it is not known to us what the optical properties of this oil are.

From any of the above oils of turpentine, which in their crude state are contaminated with resin, organic acids and other impurities, the hydrocarbon or terpene may be obtained in a pure state by the following process, in which neither the heat nor the re-

agents employed are energetic enough to modify the nature of the terpene.

The crude oil of turpentine is first washed with a dilute solution of caustic soda, until it ceases to have an acid reaction, and then distilled in vacuo. By selecting the proper fraction of the distillate, the pure terpene may be obtained.

As there are oils of turpentine of opposite optical properties, so there are two kinds of terpenes, namely:

a. *Terebenthene* (or *terebenthene*) which is *lævogyre*, and only obtained from French and other left-polarizing oil. The terebenthene from French oil of turpentine boils at 156° C. (312.8° F.) and has a spec. grav. of 0.8767 at 0° C. (32° F.). The corresponding figures of other left-polarizing terebenthenes are not certain.

b. *Australene*, which is *dextrogyre*, and obtained from American and other right-polarizing oil. The boiling-point and specific gravity of this appear to vary somewhat according to the source.

It has been pointed out above that terpenes, in general, are very easily polymerized. So it is, for instance, only necessary to heat oil of turpentine to 300° C. (572° F.) in sealed tubes. It will then be changed into a mixture of *metaterebenthene* (probably $C_{20}H_{32}$), boiling above 360° C. (680° F.); and into either of the following two isomeric varieties of the original terpene: 1. *dextro-isoterebenthene*, and 2. *lævo-isoterebenthene*, according as a right or left-polarizing terpene has been used. These products, not being, however, of practical interest, will not be further described here.

When oil of turpentine is shaken with sulphuric acid, it is converted into *camphene*, *terpilene*, *cymol*, *colophene*, and a hydrocarbon: $C_{10}H_{14}$. According as a right or left-polarizing oil has been employed, a correspondingly polarizing camphene is produced. Yet by repeatedly distilling or shaking the product with sulphuric acid, there is at last produced a variety of *camphene* which is optically inactive, and which is the substance named.

2. *Terebene*.—It was St. Claire Deville who first studied the terebene produced by the action of sulphuric acid upon oil of turpentine. J. Riban subsequently found that this "terebene" was not a pure substance (*Comptes Rend.*, vol. 79, 1547; 77, 483). The latter chemist treated oil of turpentine, boiling at 156°–160° C., with one-twentieth of its weight of sulphuric acid, avoiding the development of too much heat, and after twenty-four hours he distilled the supernatant liquid, previously washed with soda-solution, and dried. The fraction boiling below 250° C. (482° F.) was treated five to eight times in the same manner. At each distillation, there was formed sulphurous acid and water. The product finally obtained was optically inactive, and could be split, by fractional distillation, into the following substances:

1. Terebene, boiling at 155°–156° C.
2. Cymol, boiling at 174°–176° C.
3. A camphor-like body, boiling at about 200° C., and melting at 169° C.
4. Colophene, boiling at 318°–320° C.
5. Higher boiling bodies.

That portion of the original crude substance which boiled between 155° and 186° C. was treated with metallic sodium before being subjected to fractional distillation.

The "pure terebene" thus obtained by Riban was a colorless, mobile liquid, not becoming solid when cooled to 27° C. (81° F.), and possessing a faint odor.

Riban found the specific gravity of his terebene to be 0.877 at 0° C. (32° F.), and 0.860 at 20° C. (68° F.). Orłowsky found it to be 0.8624 at 15° C. (59° F.), which agrees with the figures of Riban.

Terebene, in the form in which it is prepared by manufacturers and em-

played in medicine, nearly corresponds, in physical and chemical properties, with the terebene of Riban just described. In practice, it is not considered necessary to be very particular about the exact boiling-point of the fraction collected. The chief requirement is, that it shall be optically inactive, and free from those portions which boil above 160° C.

A few authorities still recognize the existence of terebene as a chemical individual, while others prefer to regard it merely as optically inactive camphene.

Riban himself distinguished two varieties of inactive camphene, which he prepared by heating terpene chlorides with dry sodium acetate or stearate. These two substances are both crystalline, melt at 47° C. (116° F.), and boil at 157° C. (314.6° F.), and are probably identical.

Riban states that his terebene is a colorless mobile liquid. When the crude terebene, however, which is obtained by the process to be described below, is purified as much as possible, and freed from high- or low-boiling fractions, it forms a white crystalline mass, melting at about 50° C. (122° F.), and boiling at about 160° C. (320° F.) These two values, when corrected to normal temperature and pressure, so closely approach those given above on Riban's authority for the inactive camphenes that they may probably be considered as identical.

However this supposed identity may eventually turn out, the name *terebene* appears to be confined to a well-characterized substance, and, being free from ambiguity, should be retained at least as a medical and commercial term.

This substance, terebene, differs from cymol only by having two more atoms of hydrogen, and is closely related to it, and through it to the benzol group, for cymol itself is now recognized as propyl-toluol.*

The preparation of, and further details regarding medicinal *terebene* will be given further on.

It has been stated that one of the products of the treatment of oil of turpentine by sulphuric acid is *colophene*. This does not specially interest us here; but it may be remarked that, when the crude product obtained by mixing oil of turpentine and sulphuric acid is distilled with steam (which causes crude "terebene" to pass over) there remains in the retort crude colophene, which, when distilled by itself, likewise yields camphene, terpineol, cymol, and the hydrocarbon $C_{10}H_{16}$.

3. Terpene Hydrate: $C_{10}H_{18}O$.

This substance is derived from left-polarizing (French, etc.) oil of turpentine. It may be prepared in the following manner.

Mix 2 parts of French oil of turpentine with 3 parts of 90 per cent alcohol and 1 part of sulphuric acid of spec. gr. 1.640, shake frequently at first, then set aside for twelve days, separate the terpene and rectify it, preserving the portion boiling between 218°-220° C. (424-428° F.). It is an oily liquid, of the spec. grav. 0.9201 at 18° C. (64.4° F.), insoluble in water, but soluble in a mixture of 2 parts of 90 per cent alcohol and 1 part of sulphuric acid (sp. gr. 1.640).

Products obtainable from any Kind of Oil of Turpentine.

4. *Terpene Hydrochlorides.* When hydrochloric acid gas is passed through any kind of oil of turpentine, best after its dilution with benzol or carbon disulphide, a solid substance *terpene (mono-) hydrochloride*, $C_{10}H_{17}Cl$ is

formed which is also known as "artificial camphor." It is solid, resembles camphor in appearance and odor, is insoluble in water, easily soluble in alcohol, but cannot be sublimed without alteration.

On treating oil of turpentine with strong hydrochloric acid, also on similarly treating terpin hydrate (see below), or terpinol (see below), or terpene hydrate (see above), *dihydrochloride of terpene* $C_{10}H_{15} \cdot 2HCl$ is formed. This forms rhombic crystals, melting at 48° C. (118.4° F.).

Other hydrochlorides exist, but are not of special interest here.

5. Terpin Hydrate: $C_{10}H_{18}(H_2O) \cdot H_2O$.

This may be prepared from any kind of oil of turpentine. Of pure terpenes only those yield this substance which have the lower boiling-points. Terpenes boiling at about 176° C. (348.8° F.) and over, yield none.

This substance, which must neither be confounded in name with terpene hydrate, nor in appearance with terpene dihydrochloride, or other similar bodies, is formed in various ways. It is slowly produced when oil of turpentine remains for some time in contact with water. More rapidly, by exposing 8 parts of oil of turpentine, 2 parts of nitric acid (spec. gr. 1.250), and 1 part of alcohol of 80 per cent, to the air in a shallow vessel, frequently agitating at first. Or by mixing in a flask 1 volume of nitric acid (sp. gr. 1.400), 1 vol. of wood-spirit, and 2½ vol. of oil of turpentine, agitating frequently during two days, then pouring into an open dish, and adding small quantities of wood-spirit every other day.

Terpin hydrate crystallizes in large, transparent, rhombic crystals, which lose 1 mol. of water at 100° C. (212° F.) and becomes *terpin* (see the next following). Mere exposure over sulphuric acid will also drive out the third molecule of water. The crystals are inodorous and tasteless, soluble in 200 parts of cold and 22 parts of boiling water, in about 7 parts of 85% alcohol, and easily also in ether. From hot glacial acetic acid they may be obtained of great size and beauty. Crystals of this compound, of considerable size, are sometimes met with in trunks of pine trees.

This *terpin hydrate* has recently been recommended by Lepine as "the best expectorant in existence." See article in our January number, p. 15.

6. Terpin: $C_{10}H_{16}(H_2O)$.

When terpin hydrate has been deprived of the third molecule of water, it becomes "anhydrous" terpin: $C_{10}H_{16}O$. This melts at 103° C. (217.4° F.), subliming in slender needles, and boils at 250° C. (482° F.). It is very hygroscopic, and changes to terpin hydrate by mere exposure to moist air.

When treated with anhydrous phosphoric acid (P_2O_5), it is converted into "terebene" and colophene.

The name *terpin* has been used by some authors (f. i. Flückiger, Pharm. Chemie., 320 sqq.) as denoting *terpin hydrate*: $C_{10}H_{18}(H_2O)$. It is better, however, to apply the two terms as explained above.

7. *Terpinene.* When terpin is treated with moderately strong sulphuric acid, there results *terpinene*, boiling at 176.5-181.5° C. (349-358° F.), and optically inactive (Laubenheimer).

8. Terpinol: $(C_{10}H_{16})_2H_2O$.

If an aqueous solution of terpin be heated with a small quantity of hydrochloric acid, *terpinol* is produced, which is an oily liquid, having an odor resembling that of hyacinths, boils at 168° C. (334.4° F.), and has the spec. gr. 0.852.

The same substance may also be produced by boiling terpene dihydrochloride with water or with alcoholic potassa. Or, by distilling terpin with moderately dilute sulphuric acid.

9. Terpilene or Terpinylene: $C_{10}H_{14}$.

This body is formed by warming terpene dihydrochloride (of the melting point 48° C. = 119° F.) by itself. Or, by boiling terpin with a mixture of 1 vol. of sulphuric acid and 2 vol. of water, and fractionating the product. It boils at 176-178° C. (349-352° F.), and has the spec. grav. 0.8526 at 15° C.

It will be noticed that a comparatively small change in the kind or strength of acids or other modifications in manipulating oil of turpentine and terpenes in general may result in the formation of substances differing considerably from each other. It is, however, not at all improbable that some of these, now recognized as chemical individuals, will in the future be shown not to have a separate existence.

In conclusion we shall give working processes for the preparation of

Medicinal Terebene

according to Dr. Hirsch:*

Oil of Turpentine.....1000 parts.
Sulphuric Acid, concentrated q. s.
Solution of Soda.....q. s.

Mix the oil of turpentine with 25 parts of sulphuric acid, in one portion, and agitate thoroughly. When the heat generated thereby has become moderated to 70° C. (158° F.), add another portion of 25 parts of sulphuric acid. Repeat this, in suitable intervals, with three more portions, each of 25 parts, of the acid, taking care that the mixture do not acquire too high a temperature (if not properly watched, it might rise to 130° C. = 266° F., and even higher). Shake the mixture for some time, in brief intervals, then set it aside for 24 hours. Remove the oil from the acid, wash the former with enough solution of soda to remove all trace of acidity, then transfer the oil to a retort, and pass a brisk current of steam through it as long as any oil passes over.

The distillate is crude terebene, and should be optically inactive (which is to be ascertained by means of a polariscope). If it is not yet inactive, but turns the plane of polarized light either to the right or to the left [the latter would happen only if French or other left-polarizing oil had been originally used], treat it again with sulphuric acid, in proportion of 5 parts of acid to 100 of oil, and again distil with a current of steam.

From the optically inactive product finally obtained, which is a mixture of terebene and other hydrocarbons, the real terebene is separated by repeated fractional distillation, all portions boiling above 160° C. (320° F.) being rejected.

When perfectly pure, terebene is a white crystalline mass. In the form in which it is used as an antiseptic, it appears as a clear, colorless, optically inactive liquid, having a pleasant odor resembling that of thyme, the spec. grav. 0.860, and boiling at about 156° C. (313° F.).

Terebene has recently been highly recommended by Dr. Murrell as an excellent remedy in winter-cough, beginning with doses of 5 or 6 drops on sugar every 4 hours, and increasing up to 20 minims. The only disadvantage that has been noticed is this, that it imparts a peculiar odor to the urine. If used as a spray, from 1 to 2 oz. should be diffused and inhaled every week.

Shortly after Dr. Murrell had published his paper on this subject in the *Brit. Med. Journ.*, Dr. Bond, of Gloucester, claimed priority for the application of terebene in medicine, and implied that its manufacture was protected by a patent. The patent, however, does not protect the manufacture, since the product and the process by which it is obtained were known to chemists long before. Any one is, therefore, at liberty to prepare it.

* In Supplement zur der zweiten Ausgabe der Pharm. Germ. 8vo, Berlin, 1883.

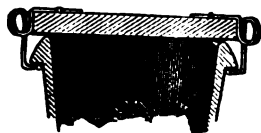
* Benzol is C_6H_6 .
Phenol is benzol in which 1 at. of hydrogen is replaced by HO (hydroxyl): $C_6H_5 \cdot HO$.
Toluol is benzol in which 1 at. of hydrogen is replaced by methyl (CH_3), and as it is thus analogous to phenol itself, it has been defined as phenyl-methane: $C_6H_5 \cdot CH_3 = C_7H_8$.
Cymol or Propyl Toluol is toluol in which an additional at. of hydrogen (of the benzol nucleus) is replaced by propyl (C_3H_7): $C_6H_4 \cdot CH_2 \cdot C_3H_7 = C_{10}H_{14}$.

JAR COVER.

THE cover, which is about the same diameter as the rim of the jar, is made of wood rendered waterproof by varnish or paint. To opposite edges are secured wire fasteners made of iron or steel spring wire. The form of these wires is clearly shown in the engraving. The cover is placed on the jar by bringing one of the spring fasteners into engagement with the under side of the rim of the jar, then pulling the other fastener until it will pass over the rim, then pushing down the cover, and releasing the second fastener, which will engage with the rim. The cover is removed by pulling out one of the fasteners. The cover can be made to fit any size jar. This invention has been patented by Mr. W. F. McFarland; particulars can be had from Messrs. McFarland and Bowles, of Pleasantville, O.—*Scientific American*, March 13th, 1886, page 163.

Milk-Wine or Kefir.

ACCORDING to a recently published instruction of Dr. Rogelmann, of Graz (Austria), in the *Deutsche Medizinische Zeitung* of January 14th, 1886, one volume of buttermilk is to be mixed with one or two volumes of sweet milk, poured in a bottle, and allowed to stand. In three hours active fermentation will set in which, in about three



Jar cover.

THE VELOPORPHYRE.

B. GIRAUD, of Dijon, France, is the inventor of a pharmaceutical appliance intended to facilitate trituration, and the mixture of fatty bodies of different consistence or with powders. It is rather limited in its adaptability to pharmaceutical work on a small scale but for working considerable quantities it may be of great assistance. It consists of two halves of a hollow ring of polished metal adapted to be firmly clamped together so that their edges form a close joint, and arranged on an axis that can be turned by a crank or by a pulley and band. The axis is supported on a stand in such a manner that it can be tilted to any angle within 90° to facilitate the charging and emptying of the apparatus. The thorough admixture of the contents of the machine is secured by means of a heavy metal ball which plays rather loosely in the annular cavity formed by the two disks. This ball needs to be of considerable weight to overcome the resistance of the mass being treated, and the centrifugal force of the machine when in motion.—*Western Druggist*, from *l'Union Pharmaceutique*.

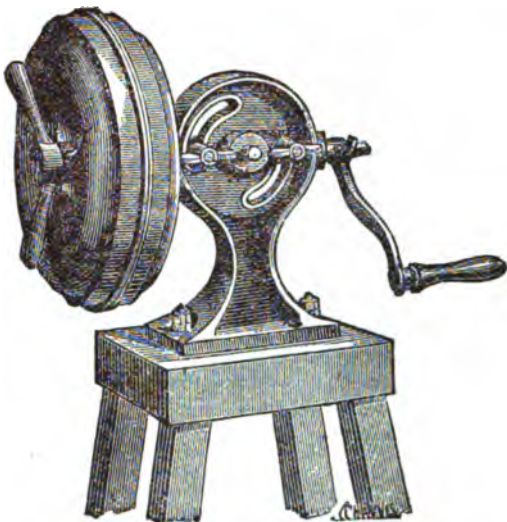


Veloporphyre.

Groot adopts for his dialyzed solution of albuminate of iron, the strength of 1 part of ferric oxide (Fe₂O₃) in 500 parts of the solution. The finished solution has a specific gravity of 1.010, is perfectly clear, has a slightly acid reaction, and a sweet and agreeable taste provided the proportion of iron above-mentioned is in solution in the state of albuminate. The solution remains unaltered for a considerable time, even in partly filled bottles. Neither heat nor the addition of alcohol changes it, and alkalies or even small quantities of acids may be added to it without affecting it. A solution of chloride of sodium, however, precipitates the albuminate, and from the latter, the albumen is separated by small quantities of acid. On evaporating the solution at a temperature not exceeding 40° C., a dry product may be obtained, containing 2.5% of iron. But as the compound in its dry form is soluble only with difficulty in the stomach, the author prefers the solution.—*Journ. de Ph. d'Anvers*.

Papayotin.

PROF. ABRAHAM JACOBI, of New York, reports four cases of diphtheria in which the membrane was digested and gradually dissolved away or at least detached in shreds by the application of a solution of papayotin. Papayotin, regarding which several



Albuminate of Iron.

A PREPARATION under the name albuminate of iron has been proposed or used frequently during the last few years, but its rather unstable character has been an obstacle to its more general employment. Mr. de Groot believes to have overcome this difficulty by starting, not with fresh white of egg—which cannot well be filtered so as to be clear, and thereby renders the final product cloudy—but with dried egg albumen. His directions are as follows: Make a ten-per-cent solution of the latter, and filter. Add a dilute solution of sublimed ferric chloride, until the albuminate of iron at first precipitated is entirely redissolved, by active stirring, in the excess of ferric chloride. Subject the resulting solution, which has a very astringent and saline taste, to dialysis, until it no longer gives the chlorine reaction with nitrate of silver. In this manner, the whole of the excess of ferric chloride, free hydrochloric acid, and other salts, particularly the chlorides of sodium and potassium (which might precipitate the albumen) are eliminated. Next reduce the whole to a definite weight. Since the liquid, in consequence of the large quantity of albumen it contains, becomes very viscid on evaporation, de-

notices will be found in preceding volumes of this journal, is a vegetable digestive ferment obtained from the juice of the trunk, leaves, or fruit of the Papaw-tree, *Carica Papaya* L. Prof. Jacobi states that he had used the substance some years ago, at first with moderate success, but was compelled to abandon it in consequence of its apparent variability. In fact, he states that certain unsatisfactory samples or lots were found to consist, "under the legitimate rules of modern tradesmen and manufacturers, of milk-sugar." Recently, however, he began to use the substance again, having probably received it from a more reliable source, and he finds it to be a most efficient agent, if properly used. He employs a solution containing

Papayotin.....	1 part
Glycerin.....	.4 parts
Water.....	.4 "

which is to be applied hourly to the diphtheritic membrane. In one case where tracheotomy had been performed, and the development of the pseudo-membrane progressed downwards into the trachea and bronchi, the solution was applied by means of a feather from a live pigeon's wing, which was dipped in the solution and, being introduced through the rubber tube in the trachea, was pushed down

days, will be at an end. The product is a fluid smelling like wine, and containing alcohol, carbonic acid, lactic acid, and caseine. The following precautions are to be observed in this in every way simple and inexpensive procedure. The sweet milk used ought not to be wholly freed from the cream, and the bottles ought to be of a size that the milk fills only two-thirds of them. The fermenting milk is to be shaken daily vigorously (about three or four times), during which manipulation a cork is placed firmly in the bottle, but removed after the shaking in order to allow the carbonic acid to escape. The opened bottle is to be placed in a horizontal position at least twice daily for a period of ten minutes, in order to let fresh air take the place of carbonic acid, and to thus prevent the stoppage of fermentation. If a very effervescent liquid be desired, the bottles are toward the close of the fermentation process allowed to stand continuously in a perpendicular position. In order to obtain new quantities of this "milk-wine," we add to a certain quantity of sweet milk one-fifth its volume of milk thus fermented, and are so able to continue this production *ad libitum*. The most favorable temperature for the preparation of this milk-wine is 15° C. (59° F.).—*Therap. Gaz.*

and turned around several times so as to leave as much of the solution as possible in contact with the false membrane. After a few hours, shreds of the latter were coughed up. The treatment was continued through some days. More membranes came; gradually they became softer and macerated, and finally the secretion became muco-purulent and mucous. Before the end of the second week the tube was removed.

Physicians who wish to use papayotin should know that there are two kinds sold by manufacturers. One is the pure ferment; and the other is a dilution containing only 25% of pure papayotin, the remainder being generally milk-sugar. To judge from the price-lists of European manufacturers of chemicals, some of them prepare only the 25% dilution, which, if labelled merely "papayotin," is liable to disappoint those wishing to try the article in diphtheria. Some manufacturers quote both the 25% dilution and the pure ferment itself: for instance, Gehe & Co., of Dresden.

At first it was supposed that the milk-sap obtained from the fruits alone would be suitable for preparing larger quantities of papayotin, because Dr. Peckoldt found nearly eighty times more papayotin in the fruit than in the leaves. But the latter being accessible in any quantity, while the fruit is not, it soon became evident that the leaves would have to form the source.

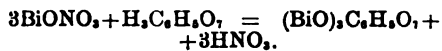
Much difficulty was at first encountered in devising an easy method of preserving the milk-sap obtained from the leaves, so as to keep it active and to permit the subsequent extraction of the digestive ferment itself. It was found that the best method was to permit the sap to fall immediately into glycerin, which prevented its decomposition, and diminished its annoying property to gelatinize. Some manufacturers at that time attempted to prepare papayotin from the dried leaves of Carica papaya, which they imported for the purpose, but without success. Only the fresh leaves can be used; and as the tree grows to advantage, and abundantly, only in its own home, some plan had to be devised to facilitate the collection and transportation of the crude juice. In April, 1882, Gehe & Co. reported [see NEW REM., 1882, p. 177] that, while their papayotin was quite effective, they themselves did not place much confidence in it, and did not think that the article would have an assured future. About the same time, however, E. Merck, of Darmstadt [see NEW REM., 1882, 240] appeared to have been more successful, since he found his preparation to peptonize two hundred times its own weight of fresh blood-fibrin deprived of moisture, while other preparations were then on the market which were very inferior.

From a report made by Gehe & Co. in 1883 [NEW REM., 1883, 174] it appears that the dried juice of Carica papaya, which, previous to the preparation of papayotin, had to do duty as the crude ferment, was then no longer salable. At this time, also, these manufacturers had been compelled, by the demands made upon them from physicians and others, to put on the market, not only the pure papayotin, but also a dilution containing 25% of it, which latter was in much greater demand than the former. It is, however, not at all unlikely that the weaker preparation was often ordered designedly for the sake of economy, and many who tried the new agent probably remained in ignorance of the fact that they had a diluted preparation under their hands. In their September report of 1884 [AMER. DRUGG., 1884, 212], Gehe & Co. state that they have induced their South American agent to adopt the following process for the preparation of a crude papayotin, which is purified after its arrival in Europe. Before the adop-

tion of this process, it was customary to inspissate the juice that was collected, and transport it thus to Europe. The process mentioned by Gehe & Co. is as follows: The fresh milky juice of the fruit [also leaves?] of Carica papaya is diluted with water (which is saturated with chloroform, in case the aqueous liquid has to be kept so long that it would be liable to spoil); and, when the resinous particles have separated, the liquid is filtered; or the liquid is mixed with just enough alcohol to produce a slight precipitation of papayotin, which carries down with it all impurities. The clear liquid is now poured into about seven times its volume of 90% alcohol, the resulting precipitate strongly expressed on muslin, and dried with a very gentle heat.

Citrate of Bismuth.

THOUGH the U. S. Ph. does not officially recognize a *Liquor Bismuthi*—a preparation still considerably in vogue—it has supplied the deficiency in part by furnishing a formula for Bismuthi et Animonii Citras, which needs to be merely dissolved in water to obtain the desired solution of bismuth. This compound salt, however, requires for its preparation a citrate of bismuth, for which the U. S. Ph. provides a working process based upon that proposed by Rother. The recent British Pharmacopoeia also gives a process for the preparation of this salt, but both of them appear to be somewhat faulty, as has been pointed out repeatedly. The last paper referring to the subject, mainly with reference to the British formula, was recently read at the Edinburgh Chemists' Assistants' and Apprentices' Association, by Peter McEwan, and we take from it the following portion (after *Chem. and Drugg.*): I have obtained by the [official] process, a citrate free from nitrate, yet not wholly ammonia-soluble; and this I take to be due to the presence of oxycitrate, the reaction between the basic nitrate and citric acid being:



This reaction is only partial, no doubt, but the nature of the process favors it. We have the same error of principle exemplified in Rother's process, now official in the U. S. P. In this process, bismuth sub-nitrate, citric acid, and water are boiled together. Here also, though the sub-nitrate undergoes complete decomposition, the product is not wholly ammonia-soluble. I have tried repeatedly and cannot get the desired result by this process, and others in whom I have much confidence have had the same experience.

It was expected, owing to the introduction of oxide of bismuth into the 1874 Addenda, that Wood's process would have been adopted, and even Mr. Umney takes the new process as Wood's; but it is not so. In Wood's process, bismuth oxide, preferably fresh, is dissolved in a mixture of solution of ammonia and ammonium citrate. This is a distinct advance on the old process, but it has one objection, viz., an excess of ammonium citrate, which we know to be unnecessary. M. Méhu, however, has proposed a process which is all that can be desired. M. Méhu dissolves crystallized bismuth ternitrate in a strong solution of citric acid, saturates one-half of the mixture with ammonia, then adds the other half of the mixture, when normal bismuth citrate is precipitated.

I have had admirable results by this process, slightly modified. The citrate is precipitated in a bulky state, and when dried on bibulous paper in a hot-air oven, it is obtained in light and milk-white flakes, and forms with ammonia a bright, almost water-white

solution, there not being a particle of insoluble residue. Méhu brings forward the process ostensibly for the direct preparation of liquor bismuthi, but, as his original paper does not contain other than approximate quantities, I give a formula for a pint [British] of liquor.

Take of

Subnitrate of bismuth.....1 oz. 180 grains
Citric acid.....1 oz. 60 "
Nitric acid.....1½ fl. oz.
Solution of ammonia and distilled water,
of each a sufficiency.

Heat the subnitrate with the nitric acid until the salt has dissolved, and the solution has acquired the appearance of a syrup; with this mix the citric acid, previously dissolved in 1 oz. of water by the aid of heat; divide the solution into two equal portions, and to one portion add solution of ammonia until the precipitate at first formed is redissolved; dilute with water to one pint, add the remaining portion of the bismuth solution with constant stirring, collect the precipitate on a calico filter, and wash with water until the washings are free from acid. Transfer the precipitate to a suitable vessel, and add solution of ammonia gradually, and with constant stirring, until the precipitate is just dissolved. Dilute with water to 1 pint.

A competent practical pharmacist has, at my request, tried this formula, and says that it is "an absolute contrast in its simplicity to the B. P. method;" but he fears there is a great loss of bismuth in washing. This I had previously determined to be under 3 per cent, having obtained 97 per cent of the theoretical yield of citrate. Hence, in this formula, I give a slight excess of bismuth over what is required for 800 grains of citrate, and, as the B. P. allows 2 per cent of water in the citrate, the loss in the washing is compensated by these provisions. Citric acid is also in excess. With the theoretical quantity the bismuth is apt to crystallize out before ammonia can be added. On the large scale, it will be possible to modify the proportions which I give; thus, for bismuth citrate the quantities might be: bismuth sub-nitrate, 13 parts; nitric acid, 13 fl. parts; citric acid, 10 parts.

Improved Mucilage.

THE use of crystallized aluminium sulphate has been recommended as a valuable addition to solution of gum arabic. The adhesive property of the mucilage is said to be so greatly increased as to render it capable of joining together wood, glass, or porcelain. The formula is as follows:

	Parts.
Aluminium Sulphate.....	3
Distilled Water.....	20
Dissolve, and add to	
Strong solution of gum arabic	
(2 gum to 5 water).....	250

—*Chem. and Drugg.*

NOTE OF ED. AMER. DRUGG.—This is an old process, but deserves to be occasionally recalled to the mind of our readers. On page 191 of NEW REMEDIES for 1876, we quoted a formula which calls for 30 grains of sulphate of aluminium to 8½ fl. oz. of strong mucilage. We have used this proportion ourselves for years, and have found it to answer very well. But we have also found that the best results are attained by raising the mixture to boiling and then straining, and (if desired) setting aside in full bottles to settle. A small proportion (about 2%) of glycerin added to the product will render it less hard and brittle when dry. If used for labels, the proportion of glycerin may be raised to 8 or 10%. It is also noteworthy that book-binders, paper-hangers, and box-makers generally add alum to the paste of wheat flour used by them.

ALARM FOR POISON BOTTLES.

THE following description of a new alarm apparatus to be attached to poison bottles, which forms the subject of German patent No. 28,935, is taken from the *Pharm. Zeitung* (No. 7):

The contrivance consists of a hollow case to be attached at the bottom of the shop-bottle. The latter is placed within the ring *a*, and the interval carefully filled with cement. The bell *b b* is fastened to the upper diaphragm of the case by means of the screw *e*, and the clapper *d* can roll freely about in the space covered by the bell. The pear-shape given to the clapper has this advantage that it sooner returns to a rest when the bottle is set down, and also that it gives a better sound when moving the bottle about.

The alarm being constantly attached to the bottle, it is likely to make itself noticeable whenever the bottle is touched or lifted up.

New Formation of Iodoform and of Analogous Iodine Compounds.

HEINRICH SPINDLER has made the interesting observation that the organic iodides of the paraffin series—namely, iodoform and the corresponding compounds of ethyl, etc.—can be prepared from the chlorides, or bromides, or chlorobromides of the particular paraffin by reaction with an inorganic

FIG. 1.



Alarm bottle.

iodide, provided only that the organic iodide in question is capable of existence, and provided also that the proper inorganic iodide is selected. Among the latter, the author found hydrated calcium iodide to be the most suitable.

If chloroform and anhydrous iodide of calcium are heated together at a temperature of 75° C. (167° F.), even for 120 hours, not the least formation of iodoform could be discovered. It began to be gradually formed, however, when the temperature was raised to 120° C. (243° F.).

The results obtained with crystallized (hydrated) iodide of calcium, however, were entirely different. The iodide, which the author experimented with, was obtained from H. Trommsdorff, in Erfurt, had a whitish or yellowish color, and had been fused in its water of crystallization. It appeared in fused, radiately crystalline, very hygroscopic pieces, melting between 70° and 80° C. (158°–176° F.). On allowing it to lie exposed to the air, it gradually decomposed with liberation of iodine. Heat accelerated this decomposition. On analysis it was found to contain 17% of water, corresponding to the composition $\text{CaI}_2 \cdot 3\frac{1}{2}\text{H}_2\text{O}$, the fraction being probably due to loss of water during the final melting of the iodide.

The author made his experiments on a small scale, and in tubes which were fused at the end, after the substances had been introduced. It was found that it was necessary to exclude every trace of water except that already contained in the iodide of calcium, and

the great avidity of this salt for water made rapid working necessary.

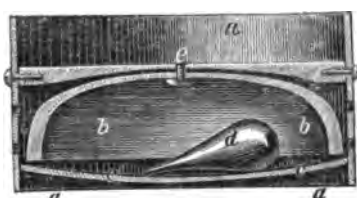
In experimenting with chloroform, the author employed 1.35 Gm. of this liquid, and 5 Gm. of calcium iodide. [The latter salt was always taken in quantities somewhat smaller than necessary for a complete transformation of the organic substance.] The reaction was carried out in a closed tube, at 75° C. (167° F.), and after cooling the same, the tube was found to contain iodoform in crystals, together with unchanged chloroform and the other products of the reaction. The yield was 17.40 per cent. On raising the temperature to 100° C., the yield became very much larger. But the heat must not be allowed to exceed 140° C. (284° F.), since otherwise the iodoform would be decomposed.—After *Liebig's Annal.*, 231, 257.

[NOTE OF ED. AM. DRUGG.—Whether iodoform can ever be prepared economically by this process is very doubtful. It is, however, not at all improbable that a practical and economical method may be worked out by combining the novel features of the new patented process for making chloroform—which has caused such a tumble in the price of this commodity—with some of those involved in the process above described.]

Nitroglycerin Tablets.

AMONG the errors of the last British Pharmacopœia, the ordering of this drug to be dispensed in chocolate tablets is perhaps the worst. Not only is the dosage uncertain, and the manipulation required dangerous, but this

FIG. 2.



method of administration is slower in action and exceedingly expensive; in fact, it is difficult to conceive why the compilers of the last edition of the Pharmacopœia should have gone out of their way to choose so inconvenient and impracticable a vehicle, when the one-per-cent solution of the drug, which has been in general use for a considerable period, was open to them. It is stable, easily gauged, and prompt in action, and has, in fact, all the merits which are conspicuous by their absence in their present formula. The tablets in question are not stamped, and bear no indication of their nature or strength, and mistakes which might be dangerous in their results may easily occur.—*Med. Press.*

On the best kind of Glass for Thermometer Tubing.

In the course of an extensive series of experiments made by a German Government Commission in conjunction with an establishment at Jena, regarding the rate of alteration in the calibre of thermometer glass-tubing during the period of "ageing" or "seasoning," it has been ascertained that pure potash or pure soda glass is least affected, and undergoes the least amount of change. A mixture of soda and potash glass, however, such as is commonly present in commercial thermometer tubing, is very considerably affected by seasoning. Some time before and after the year 1870, there was a very superior kind of thermometer tubing made in Thuringia (Germany), but this is no longer to be had. At present, the only place where tubing of the least alterability is to be obtained is said to be the "Glastechnisches Laboratorium in Jena."—After *Zeitsch. f. Inst.-Kunde*, 1886, 24.

A SELF-IGNITING BUNSEN BURNER.

ERNST DOBY, of Berlin, has devised an improved burner, which has, besides the gas tube proper, a small lateral supply tube ending inside of the globular cap of the burner, and constituting a small, independent burner giving a very small flame, which is prevented from being blown out by accidental drafts, through the globular protection, in the bottom of which there are holes for the admission of air to cause the flame to issue without smoking. When the main stop-cock of the burner is shut off, the small flame remains burning, and causes the re-ignition of the large flame when the supply is turned on again. The flame of the small burner itself may be made larger or smaller by adjusting small screws situated near the base.—*Chem. Zeit.*, 1885, No. 97.

This kind of burner appears to answer particularly well for connection with certain forms of thermoregulators.

New Color Reactions for Alkaloids.

W. LENZ has studied the behavior of a large number of alkaloids towards fusing caustic potassa, being led to make this examination in consequence



Doby's self-igniting Bunsen burner.

of having previously found this agent to serve as a test of identity for other substances (aloëtin and chrysophanic acid).

The reagent is prepared and manipulated in the following manner. A small quantity of caustic potassa "purified by alcohol" is placed on an inverted crucible cover (for which purpose such covers as have had the porcelain ring or handle accidentally broken off serve quite well), together with a little water, a trace of the substance to be examined (best in alcoholic solution) is added, and the mixture heated at first very cautiously and gradually over a quiet flame, finally to low redness. Under ordinary circumstances, that is, in the presence of traces of most alkaloids, the mass acquires a yellow color, changing gradually to brown or red, and finally becomes carbonized.

It is particularly necessary to avoid the presence of accidental impurities, such as foreign substances (fragments of corks, etc.), as these would lead to erroneous conclusions.

On applying this reaction to a very large number of alkaloids and proximate principles, it was found that only a few of them produced a characteristic color reaction. Among those which failed to give any remarkable coloration, and may therefore be regarded as yielding a negative reaction, are the following:

Aconitine (from all kinds of aconite), atropine, berberine, brucine, caffeine, codeine, coniine hydrobromate, digi-

taline, enetine, gelsemine, homatropine, hyoscyamine, hydrastine, meconine, morphine, narceine, narcotine, papaverine, pelletierine, physostigmine, pilocarpine, strychnine, veratrine, ptomaines (obtained from acid or alkaline solutions).

Positive results however were obtained with *quinine*, *quinidine*, and to a certain extent with *cocaine*.

Apomorphine, sabadilline and thebaine, at first produced a faint green color of the melted mass, but this soon changed to yellowish-brown, and could not be confounded with the color reactions produced with cinchona alkaloids. Chinoline tartrate, which had been purchased some years ago, gave the green reaction, but a purer article recently procured failed to show it, whence it may be concluded that pure chinoline (quinoline) is indifferent to the test.

In order to ascertain approximately, the degree of sensibility of the test, the latter was conducted as follows: A piece of pure caustic potassa was heated with only such a quantity of water as was required to keep the mass liquid when heated on a boiling water-bath, and to cause it to congeal when cooled to the ordinary temperature. Drops of the liquefied mass were transferred, by means of a glass-rod, to a number of crucible covers, and definite amounts of highly concentrated alcoholic solution of the alkaloids of known strength added, the cover containing the drop being previously a little warmed, to cause a more rapid evaporation of the alcohol. The mixture was then cautiously heated, and the following appearances were noticed:

Quinine ($\frac{1}{4}$ milligramme) colors the melted potassa *grass-green*. At the same time an intense, very agreeable aromatic odor (resembling *Spiraea*) becomes noticeable, which appears to be characteristic of *quinine*.

[The evolution of an odor was noticed with many proximate principles examined by the author. In the case of some the odor could not be defined; in that of others, notably of *quinidine*, *cinchonine*, and *cinchonidine*, the evolved odor was evidently that of chinoline.]

Quinidine (1 milligramme) colors the mass *grass-green*. On further heating it becomes more yellow, finally brownish. The *grass-green* color is noticeable even with $\frac{1}{4}$ milligramme of the alkaloid.

Cinchonine (1 milligramme) colors the points of the cooled and congealed mass at first reddish-brown to bluish-violet, and the edges gray. Subsequently, the potassa turns bluish-green, and develops a somewhat pungent odor. With $\frac{1}{4}$ milligramme the reaction is still plainly noticeable.

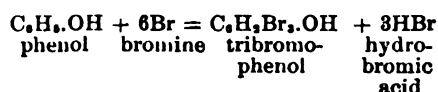
Cinchonidine (1 milligramme) colors the mass brownish-red, afterwards blue, beginning at the edges; $\frac{1}{4}$ milligramme still produces a transient but plainly visible blue, finally gray tint.

As there are no characteristic [distinguishing] color reactions for the cinchona alkaloids, the above may often be found to be useful criteria.

Cocaine. The melted mass is colored yellow even by the most minute quantities of cocaine, and this yellow color always turns brown. The characteristic color, however, which cocaine imparts to the mass is rose-red, but it is difficult to bring it about and frequently is not obtained at all. When it is successfully produced, it spreads over the whole of the mass, but is often so feeble that it can only be distinguished when carefully watched for. Sometimes a more intense rose-color is obtained with smaller quantities of the alkaloid than with larger. The author generally obtained it when using as little as $\frac{1}{4}$ milligramme of cocaine. He could not ascertain the reason of the uncertain occurrence of the color.

Estimation of Phenol by Means of Bromine.*

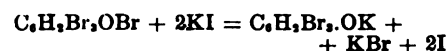
LANDOLT, in the description of his gravimetric process for estimating bromine, expressed the reaction between bromine and phenol by the equation:



Koppeschaar altered this into a volumetric method of analysis, and in investigating this, the authors found that the action of bromine water, either strong or dilute, on phenol resulted in the formation of tribromophenol bromide $\text{C}_6\text{H}_2\text{Br}_3\text{OBr}$ according to the equation:



(Benedikt had previously discovered that the compound was formed by the action of an excess of bromine on phenol.) The authors also found that during the titration, in addition to the action of the excess of bromine on the potassium iodide, the excess of this salt reacts on the first formed tribromo-phenol bromide, probably according to the equation:



This explains how it was that Koppeschaar's results, based on the correctness of Landolt's equation, were accurate, since in each case one molecule of phenol would react on six atoms of bromine.

The titration of phenol by bromine was found to be available for pure phenol, and that the substitution of the compound, $5\text{NaBr} + \text{NaBrO}_3$, for the bromine water, as suggested by Koppeschaar, gave still more satisfactory results.

This titration process is not available for crude carbolic acid or coal-tar oil; for not only do they contain homologues of phenol, which act on bromine, but also it is not easy to remove the whole of the phenol from coal-tar oil by means of water. If, on the other hand, the coal-tar oil itself be allowed to act directly on the bromine, only the surface of the globules is decomposed; hence the attempts made to titrate coal-tar oil with bromine did not yield concordant results.—*The Analyst*, Feb.

Determination of Phosphoric Acid.

MUCH has been written about the quantitative determination of phosphoric acid in mixtures, particularly in presence of iron and aluminium, and the use of citrates of alkalies has been recommended for this purpose, with many modifications. Julius Laubenheimer has lately worked out an improved process which has been carefully compared by Dr. Fassbender with the molybdenum process, and has been reported by this chemist to yield perfectly satisfactory results, so that the molybdenum method may be abandoned. The process is as follows:

From 25 to 50 C.c. of the liquid containing the phosphates—in quantity corresponding to 0.1 to 0.2 Gm. of phosphoric anhydride, P_2O_5 —is mixed with 10 C.c. of solution of citric acid (500 Gm. in 1 liter), and afterwards with a large excess of concentrated ammonia. When the mixture has somewhat cooled, 15 to 20 C.c. of the ordinary magnesium mixture (see U. S. Ph., p. 392, but preferably containing chloride instead of sulphate of magnesium) is added, whereupon the precipitate of phosphate of magnesium and ammonium will separate in a crystalline condition. The precipitation is hastened by stirring with a glass

rod during 1 or 2 minutes. It is best to delay filtering until the following day to insure complete precipitation. The latter may be shown to be complete by taking a little of the filtrate in a test-tube, acidulating with nitric acid, adding molybdate of ammonium, and warming, which must not produce any turbidity. The small quantity of precipitate which settles upon the walls of the beaker and the stirring rod may be detached by rubbing with a rod covered at the end with a small piece of rubber-tubing. The precipitate is first washed with water of ammonia, afterwards with alcohol, and may then be at once ignited in platinum.

When very much iron and alumina are present, the quantity of solution of citric acid must be increased, and is then best doubled (20 C.c.), a correspondingly larger quantity of ammonia being afterwards employed. But after the magnesium solution has been added, the mixture must be stirred for several minutes at least, until the liquid portion appears cloudy. If this is done, the precipitation of the phosphoric acid will be completed within an hour (even in presence of very much iron), and filtration may be proceeded with at once.—*After Chem. Zeit.*, 1885, No. 103.

Terebene.

TEREBENE [see also elsewhere in this number] is the popular medicine of the moment. Dr. Murrell published an article in the *British Medical Journal* of December 12th, in which he stated that he had obtained excellent results in cases of winter cough by the use of pure terebene. The dose he advises is from 5 to 20 minims on sugar. He also administers it as a spray, from one to two ounces to be diffused and inhaled every week. Terebene, he finds also, relieves flatulence and acidity, and combined with equal parts each of oil of cubebs and oil of santal wood, mixed with liquid vaseline and used in an atomizing apparatus, he had found to yield excellent results, not only in winter cough, but also in post-nasal catarrh as well as in improving the tone of the voice. Terebene is a molecular modification of the spirit of turpentine by five per cent of concentrated sulphuric acid and distilled repeatedly.—*Chem. and Drugg.*

Calcium Chloride for Enlarged Glands.

DR. W. CRIGHTON (*Practitioner*, September, 1885) states that in glandular enlargement of the neck in children, where the glands seem massed together, and are almost of a stony hardness, and in which both iodine and cod-liver oil have failed, chloride of calcium will frequently produce the most satisfactory results. After some weeks' use of the chloride, with careful attention to diet and hygiene, there seldom fails to be noticed a softening and separation of the individual glands, and generally in a few months such a reduction in size and complete disappearance in milder cases has taken place as to warrant the term cure to be applied to the case. On the discontinuance of the remedy, however, an increase of size often takes place, necessitating its continuance for intervals of a year or more. Crystallized chloride of calcium should always be prescribed, as the anhydrous salt forms a turbid solution, and has an unpleasant taste. The recognized dose is from 10 to 20 grains and even more, but he has generally used a smaller dose of 1 or 2 grains for young children, and rarely over 12 or 15 for adults. The formula which he uses is 5 ounces of the crystallized salt to 7 ounces of syrup, the dose varying from 5 to 40 minims, according to the age.—*Therapeutic Gazette*.

* Abstract of a paper by C. Weinreb and S. Bojdi in the *Monats. J. Chem.*, 1885, 506.

DETERMINING THE MELTING POINT OF FATS.

C. REINHARDT has examined the various methods heretofore proposed for determining the melting point of fats. Of these he finds only Guichard's method capable of yielding reliable results, if several sources of error are eliminated. The principle of this method consists in this—that a sample of the fat introduced into the end of a narrow glass-tube, the remainder of which is filled with a colored liquid having no solvent or other action upon the fat, will be pushed out of the tube by the column of liquid when melted. This method, however, leads to erroneous results, since the fat will often be retained by capillary attraction even though it be already melted; and further, because there is no prescribed specific gravity for the liquid which is intended to push it out of the tube.

In place of using an indefinite pressure of a column of water, Reinhardt recommends to use indirect pressure which can be exactly regulated. This is accomplished by means of the apparatus here illustrated.

a is a funnel-tube graduated in one-half centimeters and having its zero point below. *b* is a glass-cylinder closed with a rubber stopper, *c* is a

lower will be the melting point observed. Therefore, the very pressure itself introduces an error which may, however, be rendered comparatively small by care. The bore of the capillary tube containing the fat likewise has an influence upon the result. For instance, in taking the melting point of paraffin, with a tube of four millimeters bore and a water-pressure of 11-13 Cm., the melting point was 52° C. On repeating this experiment with a capillary tube, the other conditions being the same, the melting point was between 54 and 55° C.

No matter what method may be employed, the following precautions ought to be observed.

It is best always to use the same beaker and to fill it with the same amount of liquid. The bulb of the thermometer (which should be graduated to $\frac{1}{10}^{\circ}$ C.) and that portion of the tube which contains the fat should always be adjusted at the same level and height over the bottom of the beaker. The column of fat should not be higher than the column of mercury in the bulb of the thermometer. If longer columns of fat are to be used, they should be arranged horizontally, best in a coiled or curved tube. The thickness of the glass of the tube should be the same as that of the thermometer bulb. Warming the beaker is best

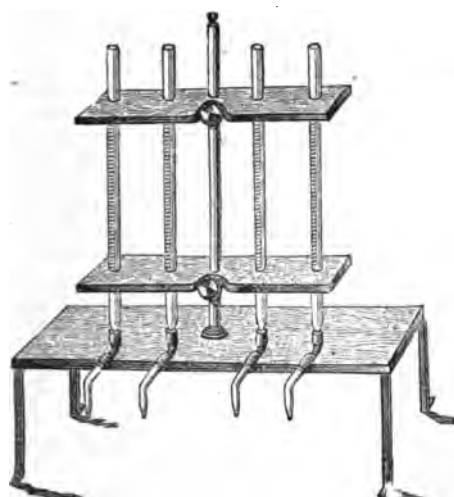
BURETTE HOLDER.

DR. LUDWIG WEINSTEIN prefers to arrange his burettes in the manner here illustrated. The burette-tubes pass through two boards or frames adjustable by set-screws, and the holes through which they pass are of such diameter that it requires a slight effort or friction to raise or lower each burette. To the end of each is attached a bent delivery-tube by means of a piece of rubber-tubing. When the liquid in the burette is to be prevented from flowing, the burette is gently pressed down against the table, causing a kink in the rubber-tube. To set it dropping or flowing again, it only need be slightly raised.—*Chem. Zeit.*, 1885, No. 103.

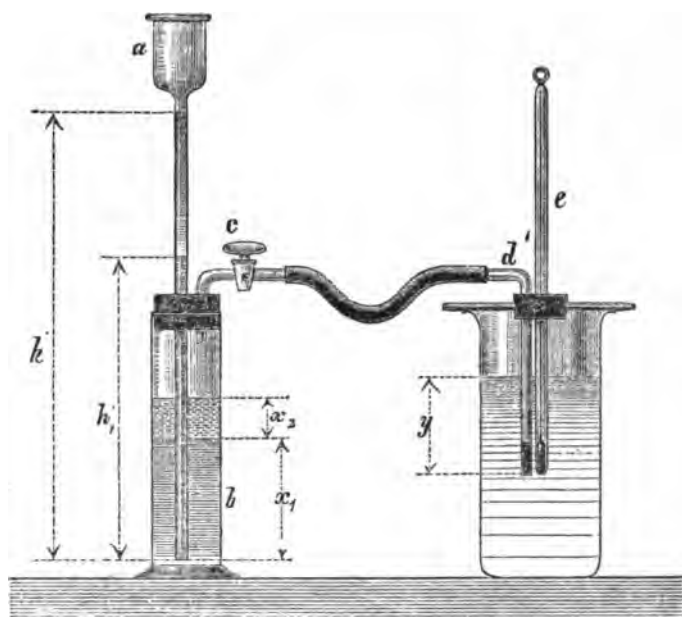
A new Test for the Purity of Cocaine.

MR. ALEXANDER BOHRINGER has communicated to us a new test for cocaine, which for its apparent simplicity and accuracy will probably be accepted as a criterion for the purity of this alkaloid.

Take a solution of hydrochlorate of cocaine, and add an equal part of a solution of permanganate of potassium. The mixture should form a fine



Weinstein's burette holder.



Determining the melting point of fats.

glass tube with stop-cock, *d* is a capillary glass tube containing a column of fat about two centimeters high, and *e* is a thermometer. Before connecting the two parts of the apparatus, air is blown through the glass stop-cock *c*, until the water in the funnel-tube has risen in the latter, when the stop-cock is closed and connected with *d* by the rubber tube. The stop-cock is now again opened, and the column of water in the funnel-tube will now perhaps correspond to the height *h*. This latter is read off on the scale and noted; also the height (*x*) of the column of water in the cylinder is measured, as well as the distance *y*. [It will be noticed that the level of water in the beaker is somewhat higher than that in the cylinder.]

The beaker glass is now very gradually warmed, until the fat melts, which will then be pressed out of the capillary tube. At this moment the temperature is read off. The column of water contained in the funnel-tube *a* falls to *h*₁, but rises in the cylinder to the mark *x*₁.

Now the water-pressure, by which the fat is forced out of the tube, is represented by the following equation, in which *p* means pressure:

$$p = h - (x_1 + x_1 + y), \text{ or}$$

$$p = h - h_1$$

The higher a pressure is applied, the

performed on a plate of asbestos. Capillary and other tubes, up to 4 Mm. bore, after being charged with fat—particularly if this has a low melting point—should be laid aside (together with the thermometer) for one or two days, before taking the melting point.

The glass tubes must be absolutely clean and free from defects. It may be advantageous, but it is not absolutely necessary, to keep the water in the beaker in motion by a curved wire or other arrangement.

The fat to be examined is previously filtered through a dry filter and funnel into a small beaker, in an air-bath of sufficient temperature to keep it liquid. When charging a 4 Mm. glass-tube, the fat in the beaker is melted, the tube is dipped into it to a height of 1 to 1.5 centimeters, the upper orifice closed with finger and the tube withdrawn. It is immediately dipped into cold water, after a short time the finger is withdrawn, and the tube laid aside. For capillary tubes the author uses such as have an external diameter of 7 Mm. and a bore of 4 Mm., and have been bent into a curve.—*Zeitsch. f. anal. Chem.*, 1886, 16.

The Albany College of Pharmacy, at its Commencement on March 1st, granted degrees to ten gentlemen.

precipitate of permanganate of cocaine. If the solution is very dilute, the precipitate will form, after a certain time, dark-violet crystals. There is no decomposition of the permanganate of potassium likely to occur in the process, as the precipitate is very constant, and it can be dissolved in water by carefully heating it; while, by heating for a longer period, a decomposition will take place, and peroxide of manganese [manganese dioxide] will be formed. The cocaine subjected to this process should always be in crystals, having a similar form to those of sulphate of magnesium.

Acetophenone has been used by Mairer and Combemale in experiments to determine its power as a hypnotic in doses of 10 to 45 grammes in 24 hours, administered to insane persons presenting more or less excitement. Some of the patients took the drug for eleven consecutive days; others for five or six days. The results impressed experimenters with the inefficiency of the drug for this purpose.

Action of Sunlight on Iodoform.—According to Dacomo, iodoform is completely decomposed by sunlight in the presence of oxygen, but this does not occur in a vacuum or in the presence of other and indifferent gases,

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EDITORIAL.

ON several occasions we have recommended that pharmacists should co-operate in collecting and publishing definite information respecting the frequency with which certain articles enter into physicians' prescriptions. Without such information it is extremely difficult for any committee charged with pharmacopoeial revision to decide upon the articles to be retained in or excluded from the pharmacopoeia; and when we consider the extent of the territory of the United States of America, and the rapid increase in the number of remedial agents, the importance of some such method of collective investigation cannot fail to be apparent.

Two or three persons have already reported the results of labors in this direction, and the latest and most important contribution of this nature is that by Mr. Albert E. Ebert, of Chicago, made to the Illinois Pharmaceutical Association, at its last meeting.

Nine collaborators in various portions of the State, of which Mr. Ebert was one, reported the results of their examination of 15,734 prescriptions by over 807 physicians (three reporters did not give the number of physicians whose prescriptions were examined). The total number of articles enumerated embraced about 1,130, and the report shows in an admirable manner the wants of a large portion of the physicians of Illinois.

There is no work which could be undertaken by the various State pharmaceutical organizations, with reference

to the revision of 1890, which would be of greater value than the collection of similar information.

SOME time ago, the announcement was made that Dr. Williamson and Mr. Springmuhl discovered the real active principle of hops, to which the name "hopeine" was given. This pretended principle has been recently examined by several French chemists and physicians, who reported that it is either identical with, or, at least, exactly similar to, *morphine*. The first to announce this was Dr. Dujardin-Beaumetz, who gave the results of experiments made by Mr. Bardet for the firm of Adrian & Co. The latter firm had obtained the hopeine through Thos. Christy & Co., of London. Subsequently it was ascertained that quite large supplies of hopeine were offered in the English market, in spite of the supposed scarcity of the new alkaloid. The manufacturers of the article are the Concentrated Produce Company. On examining original packages of the article as obtained from Thos. Christy & Co. and the manufacturers themselves, it was found that Christy's sample had a pronounced sweetish odor, like that of oil of wintergreen, and also a burning taste such as is produced by essential oils. The sample obtained from the manufacturers had a strong odor of hops. It appears, however, according to the account given in the *Chem. and Drugg.* (February 15th), from which we abstract this article, that the difference did not originate with Thos. Christy & Co., who sold the original article merely with substitution of their own label.

The Concentrated Produce Company insists upon the statement that hopeine is made from hops. Messrs. Christy & Co. state that the article was brought out some years ago under the name "hopeine," but was given up. Also, that E. Merck, of Darmstadt has the exclusive sale of it on the Continent at the present time. The article is reported to have had a large sale in Germany without any complaints having been made. The editors of the *Chem. and Drugg.* have also received a statement from Dr. G. V. Weissenfeld on the relation of hopeine to morphine, from which the following is an abstract, and which defends the existence of hopeine as a chemical individual:

"While several well-known chemists have pointed out the great resemblance existing between morphine and hopeine, it is clearly shown by the investigations of Smith, Williamson, and Roberts that these two alkaloids are not identical.

"To point, like Bardet, to the color tests as proof of the identity of the two alkaloids is as unjustifiable as it would be to maintain that atropine, hyoscyamine, and daturine are identical because they show similar points of resemblance.

"It may be, of course, that morphine is actually present in *Humulus Lupulus* as well as in the poppy, just as caffeine is found in *Coffea arabica*, *Thea chinensis*, *Paullinia sorbilis*, etc.

"Some of Bardet's reactions are not even characteristic of morphine, and if the crystals obtained by sublimation are examined under the micro-

scope, the difference between hopeins and morphine will at once become apparent, and the same result is obtained by exposing a drop of the alcoholic solution to free evaporation.

"The point of solution [should probably read: melting-point.—ED. AM. DR.] of hopeine is under 100° C.; that of morphine over 120° C. The point of sublimation is under 130° C. for hopeine, over 160° C. for morphine. The smell of hops does not properly belong to hopeine, but is caused by traces of a decomposition product of the alkaloid. The characteristic smell of hops, although expelled from hops by the drying process, may be revived by heating it with sulphuric acid.

"The sediment caused in concentrated solutions by tannic acid is soluble in [the case of] morphine by the addition of a drop of hydrochloric acid, and not soluble in [the case of] hopeine.

"There are also great physical differences between morphine and hopeine, especially in their action on the pupil. The former always causing myosis, while hopeine, if applied to the eye of a cat in small doses, causes dilatation; in large doses the mydriatic action on the human eye is also apparent. Crystallized hopeine only should be used in experiments."

[Dr. Weissenfeld reports, in the *Pharm. Rundschau* (Prag), that pure crystallized hopeine has the composition, $C_{17}H_{19}NO_4 \cdot H_2O$; the hydrochlorate, $C_{17}H_{19}NO_4 \cdot HCl \cdot 3H_2O$; and the sulphate, $(C_{17}H_{19}NO_4)_2 \cdot H_2SO_4 \cdot 4H_2O$. The composition of morphine is: $C_{17}H_{19}NO_4 \cdot (H_2O)$. According to this, the two alkaloids, morphine and hopeine, would seem to differ but little in ultimate composition. To us, however, this does not appear to have been positively demonstrated as yet, inasmuch as the differences in percentage composition are within the usual variations of an ultimate analysis made on one and the same substance. The percentage composition of the two alkaloids, crystallized, would be:

	hopeine. $C_{17}H_{19}NO_4 \cdot H_2O$	morphine. $C_{17}H_{19}NO_4 \cdot H_2O$
C.....	65.06	63.95
H.....	6.03	5.95
N.....	4.22	4.89
O.....	19.24	20.06
H ₂ O.....	5.42	5.61

Dr. Weissenfeld, however, mentions a number of other differences between the two substances, which, if confirmed, would form proofs of their separate existence.—ED. AM. DRUGG.]

The Concentrated Produce Company assert that hopeine is, with them, a by-product, their chief manufacture being a condensed beer, for which they use the American wild hops.

Steps have been taken to obtain invoices of the latter, by Christy & Co., with a view of having the question thoroughly examined. [It seems to us of sufficient importance to be investigated in this country likewise.—ED. AM. DR.]

WE should have called attention to the fact, in connection with the item on "Milk of Magnesia" in our last issue, that the title is the property of the Chas. H. Phillips Chemical Co., and that the process will not give an article similar to the one entitled to be called by that name.

The process by which the result is obtained is likewise secured by patent. One of the proprietors described the process to us in detail several years since, and it is not similar to the one published.

TWENTY-EIGHT gentlemen received diplomas at the commencement exercises of the Maryland College of Pharmacy, held at the Grand Opera House in Baltimore, on the 18th of March.

THE eighth annual meeting of the Ohio Pharmaceutical Association will be held in Springfield, on Wednesday, June 2d. It is expected that the central position of Springfield, and the preparations which have been made for the meeting, will insure an unusually large attendance of members and others interested in pharmacy. Those who may find it to their interest to take part in the exhibit should communicate with Theodore Thorp, Esq., the local secretary.

WE are indebted to Mr. Ed. R. Beckwith, of Petersburg, Va., the Secretary of the Virginia Pharmaceutical Association, for the information that the Pharmacy Bill had passed the Legislature, after four years of labor, and at the date of his letter (March 3d) awaited the Governor's signature.

The friends of the measure are entitled to much praise for the persistence with which they have worked for the achievement of this desirable end.

MR. BECKWITH also writes that the fifth annual meeting of the State Pharmaceutical Association will be held at Alexandria, May 11th, 1886. Exhibitors should communicate with Mr. Edgar Warfield, the Local Secretary.

LATER information states that the Virginia Pharmacy Law was approved by the Governor on the 3d of March, and the following gentlemen were appointed a Board of Pharmacy for the State: J. W. Thomas, Jr., of Norfolk; T. Roberts Baker, of Richmond; Robert Brydon, of Danville; Edgar Warfield, of Alexandria; and E. R. Beckwith, of Petersburg.

THE Supreme Court of the United States has recently rendered its decision upon the legality of local taxation of commercial travellers, as follows: "We think that the act in question operates as a regulation of commerce among the States in a matter within the exclusive power of Congress and that it is for this reason repugnant to the Constitution of the United States and void."

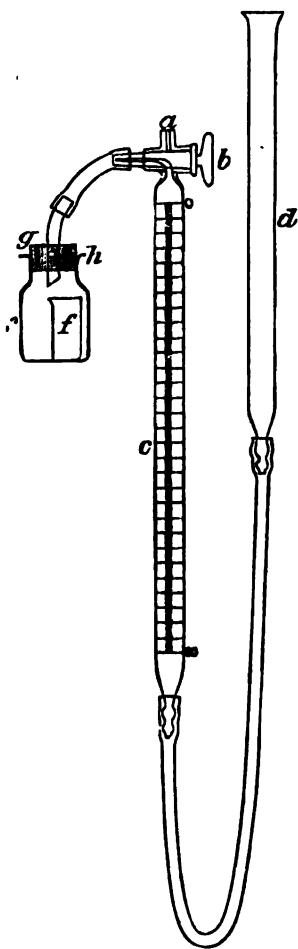
A RECENT law enacted in Georgia requires all preparations of morphine to be dispensed in scarlet paper, with a scarlet label having the name of the contents in white letters.

The California College of Pharmacy will commence its next session on the 5th of this month and will continue it into September.

The College of Pharmacy of the City of New York held its fifty-sixth annual commencement on Tuesday, March 30th, an address by the Hon. John R. Brady being the leading feature of the occasion, next to the granting of degrees.

AN IMPROVED NITROMETER.

PROF. G. LUNGE describes, in the *Ber. d. Deutsch. Chem. Ges.* (1885, 2,030), an improved form of his nitrometer, which may be used for the estimation of urea and similar nitrogenized substances. The apparatus consists of two tubes, one (*d*) not graduated and slightly funnel-shaped at the top, the other (*c*) being accurately graduated into 30 C.c., each divided into fifths, and provided at its upper end with a stop-cock perforated as shown in the cut. The end of the stop-cock is connected, by means of rubber-tubing, with a small bottle in which the reaction is made to take place. If the apparatus is to be used for urea, for instance, the proper quantity of urine is measured into the vessel (*e*), and the corresponding amount of solution of brominated soda [for each C.c. of urine, about 10 C.c. of a solution made by dissolving 10 Gm. of caustic soda in water to 125 C.c. and adding 2.5



C.c. of bromine.—ED. AM. DR.] into the smaller vessel (*f*). The two glass-tubes are fixed in suitable holders at equal heights, and enough mercury is poured into the open tube to cause it to rise exactly to the mark 0, when the open tube is raised as high as shown in the illustration. At this elevation it is then fastened. The rubber stopper (*g*) is now inserted into the generating bottle, and any pressure of the air thereby produced within the latter removed by opening the stop-cock (*b*) so as to communicate with the outer air (*a*). It is then again turned. If the level of the mercury is now still exactly at 0, the tube (*a*) is again lowered to its former position, whereby a rarefied space will be produced over the surface of the mercury in the burette, allowing a more rapid escape of the gas produced by the reaction in the bottle. This is started by inclining the bottle so that the reagent will mix with the urine. When no more gas is given off, and the apparatus has again acquired the ordinary temperature of the room, the open tube is adjusted at such a height that the level of the mercury in both tubes is exactly alike, and the

mark at which the mercury stands in the tube is then read off. [In the case of urea, 1 C.c. of gas—nitrogen—at the ordinary pressure and temperature, corresponds to 0.0027 Gm. of urea.—ED. AM. DR.]

Prof. Lunge adds that, if a lesser degree of accuracy is permissible, water may be used instead of the mercury.

A NEW BURETTE.

J. WALLENSTEINER, of Stuttgart, has patented a new form of burette, the novel feature of which is shown in the annexed cut. Into the lower end of the burette tube proper there is fused a conical recess *b*, and a special extension piece *a* is fused on the end of the burette itself. The contents of the burette flow through the glass tube *c* whenever the lateral orifice, situated near the upper end of the latter, is made to coincide with the aperture *b* in the conical recess. The glass tube *c* is, of course, carefully ground into the recess. The object of the extension piece *a* is to avoid warming the liquid in the burette by the heat of the hand when turning the drop-tube *c*.



Osmate of Potassium.

E. MERCK, of Darmstadt, prepares this salt, as it appears to have advantages over the free osmic acid which, besides being very irritating to the air passages, is also very hygroscopic. Osmate of potassium has the composition $K_2OsO_2 \cdot 2H_2O$. Both the acid and this salt are used for the same purposes. Neuber has employed them with great success hypodermically, in peripheral neuralgia, and Mohr against rheumatic sciatica, the latter using a 1 per cent aqueous solution. In goitre, subcutaneous injections are recommended by Szumann and Eulenburg, and in sarcoma and leucoma by Delbastille. Recently it has been recommended by Wildermuth for the treatment of epilepsy, with simultaneous administration of bromide of potassium. He gave it internally, in doses of $\frac{1}{4}$ grain, altogether $\frac{1}{2}$ grain per day, in pills made with white bole, and coated, if possible. When too long exhibited, the remedy may produce disturbance of the digestive organs.

The Kentucky Coffee-Bean.

PROF. R. BARTHOW, of Philadelphia, reports the preliminary results of experiments with the *Gymnocladus canadensis*, or Kentucky coffee-bean, a concentrated aqueous extract having been employed. The toxic properties of the drug have already been observed, flies having been stupefied by it, and these experiments, reported in the *Amer. Journ. of Med. Sci.* for April, show that the drug has powers analogous to those of Calabar bean.

Fluid Extract of Quebracho is said by H. J. Wegner (*Amer. Journ. of Pharm.*) to be capable of relieving the asthma caused in many persons by handling powdered ipecac.

Benzoate of Cocaine is said by A. A. Bignon, of Lima, to be extremely soluble, easily crystallizable, and retains the characteristic odor of coca. In comparing its effects with those of the latter, it was found that their duration is much longer.

A College of Pharmacy is to be established in Buffalo, N. Y., in connection with the medical department of the University. Prof. R. A. Witthaus, formerly a professor in the University of the City of New York, has been elected President of the faculty.

APPARATUS FOR RAPIDLY DETERMINING THE CORRECT VOLUME OF A GAS.

THE correct measurement of gases is no longer a task which belongs exclusively to the professional chemist or physicist, but has become a necessary operation in various technical laboratories, as well as in pharmacy and in medicine. Since Prof. Eykman has published his method of assaying spirit of nitrous ether by measuring the amount of nitric oxide which is eliminated from a given amount of the liquid (NEW REM., 1882, 139), several other methods have been successfully employed for the same purpose, all of which, in order to yield correct results, require a correction to be made in the volume of the gas eliminated, depending upon temperature and barometric pressure. The estimation of urea by the hypobromite process, which is so commonly practised, also requires that a correction should be applied, though this is often neglected, under the belief that the difference from the true amount is but trifling. It makes a vast difference however, when the extremes of temperature in the different seasons of the year, and the varying elevation of different parts of a country over the sea-level are taken in consideration. The proper application of the correction always involves a careful reading off of the thermometer and barometer, and considerable of calculation. All this may be obviated by making use of the ingenious plan proposed by Clemens Winkler, which involves only the adjustment of a standard instrument *once for all*, and the mere inspection of which at any subsequent time furnishes simple data for making corrections.

The requisite apparatus (see cut) consists of a stand having two arms. The lower one of these is stationary and supports the measuring vessel A. The other arm can be adjusted higher or lower, and carries an open glass tube, protected at its upper end by a dust-cap. The two tubes are connected below by stout rubber-tubing. The measuring tube A has a capacity of exactly 100 C.c. from the glass-stopper on top to the mark 0 on the scale (near the middle), and the graduation extends upwards to 5 C.c., and below to 25 C.c., so that volumes between 95 and 125 C.c. may be correctly read off to the tenth part of a cubic centimeter. These two extreme volumes would correspond to 100 volumes of normal air, brought to 0° C. and a pressure of 800 millimeters in the former case (95 C.c.), and to 30° C. and 700 M. in the latter case (125 C.c.), so that any pressure or temperature likely to occur in making measurements of gases in the same room where this standard apparatus is kept, is provided for.

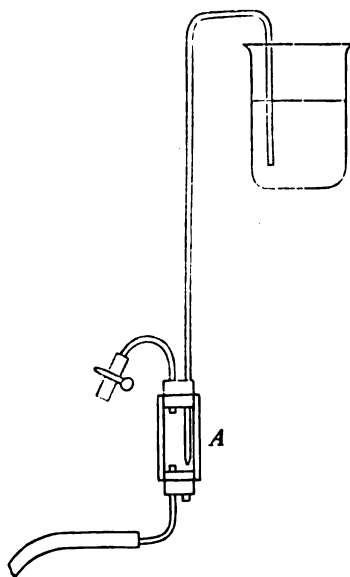
The apparatus may be charged with water to the level shown by the dark portion, but it is preferable to use mercury. It is adjusted as follows: The glass stop-cock (which must be ground and greased so as to close absolutely tight) is opened, and a few droplets of water allowed to fall into the tube, if mercury is used as filling. If water is used, this is, of course, unnecessary. The object of the water is to saturate the within contained air with aqueous vapor, for nearly all gases that require measurement are collected over water, and are, therefore, likewise saturated with moisture. A quantity of mercury approximately corresponding to the volume shown in the cut is then introduced through the other tube, and the apparatus, together with an exact thermometer and barometer, set aside in a room (without heat or fire). After a few hours, or better still, after 24 hours, the ratings of the barometer and thermometer are carefully taken, and the volume then calculated which would be occupied

by 100 C.c. of air (considered in its normal condition) under the conditions of pressure and temperature then prevailing. The calculation is made by the following formula:

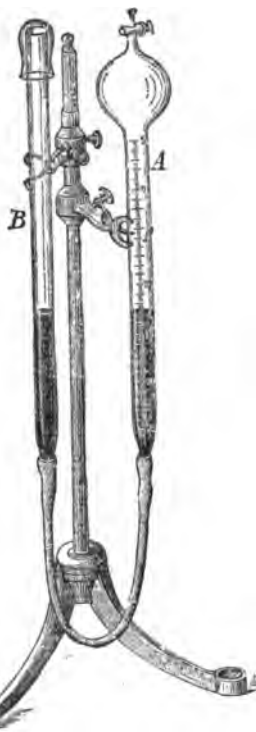
$$V = \frac{(760 - 4.5) 100 \times (273 + t)}{273 (B - f)}$$

in which V = volume sought, t = observed temperature, B = observed barometric pressure in millimeters, and f = the tension of aqueous vapor at the observed temperature [to be taken from Regnault's tables].

The stop-cock being then still open, the movable tube B is raised or lowered until the level of mercury in the other tube stands exactly at the mark



Siphon and siphon-starter.



Apparatus for determining volume of a gas.

found by calculation, and the stop-cock is then permanently closed. The confined volume of air, corresponding to 100 C.c. in its normal condition, will expand or contract with every change of temperature or pressure, and the rate of expansion or contraction is represented by the number of C.c. which the mercury occupies below or above the zero mark.

If, therefore, any measurements of gases (over water) by any other forms of apparatus are made in the same room, it is only necessary to inspect the above described standard. Should it happen that the mercury stands at exactly 0, no correction of the volume of any gas then found would be necessary. If it is above or below, a simple

calculation (by proportion) will indicate the true volume.—*Ber. Deutsch. Chem. Ges.*, 1885, 2, 535.

SIPHON AND SIPHON-STARTER.

A SIMPLE contrivance to cause a siphon to flow is shown in the accompanying illustration. It is intelligible without explanation, but the remark may be added that the length of the wide tube A should be so chosen that no risk may be run of aspirating or sucking the liquid through the outer tube bearing the pinch-cock before the latter can be closed.—*After Zeitsch. f. Anal. Chem.*, 1886, 139.

Production of Quicksilver in California.

ACCORDING to Mr. J. B. Randol, of San Francisco, California produced 32,073 flasks (of 76½ lb.) of quicksilver in 1885, selling at \$28.50 to \$32.00 per flask. 21,400 of these flasks were the product of the New Almaden mine. The ten other mines made, altogether, 10,673 flasks. The profits and production of the metal have decreased of late years, and it is stated that the American mines now known will be exhausted by the year 1900.—*Sci. Amer.*

Kava-Kava as the Source of a new Local Anæsthetic.

DR. LEWIN, of Berlin, recently announced to the Medical Society of Berlin that the resinous substance obtained from *Piper methysticum* possesses a property like that of muriate of cocaine in inducing local anesthesia. This resin is soluble in alcohol, has an aromatic taste, and when applied to the tongue leaves a sense of pricking or burning, which soon passes into local insensibility. The conjunctiva is similarly affected, and when applied to the eye its effects are quite persistent, and followed by no anatomical lesion. The sensitiveness of the iris to light is not affected. Hypodermic injection of the solution causes insensibility of the tissues with which it comes in contact.

Hydrobromate of Hyoscine has been tried as a hypnotic in the Willard Asylum for the Insane, and, according to Dr. P. M. Wise and other members of the medical staff, it "disposes to sleep indirectly after several hours, when given in sufficient doses to produce its marked physiological effects, such as muscular relaxation and, occasionally, stupor; but that it cannot be regarded as a hypnotic in its proper sense." In their experience it does not possess the value of hyoscyamine in any of the uses to which it is ordinarily applied.

Fattening Following the Use of Chewing Gum.—The *Macon (Ga.) Messenger* says: Twenty years ago the rule was that Southern women were thin and delicate; it is not the rule now. Southern women are not physically equalled in all North America. Any physician who is as well informed as he ought to be will tell you that this is true. This change is due to the habit of chewing gum. . . . As to Southern men, they are as thin and gaunt as they ever were, and so they will remain until they cease to chew tobacco and chew gum.

The Chicago College of Pharmacy held its nineteenth commencement on the 4th of March and awarded diplomas to sixty-eight candidates. A meeting of the alumni, officers, and members of the College followed, during which a supper occupied a large share of attention.

Soluble Citrate of Magnesium can be prepared by dissolving 100 parts of citric acid in 25 parts of water, by the aid of a water-bath, adding 64 parts of carbonate of magnesium, and drying the product.

NOTES ON PRACTICAL PHARMACY.*

(Continued from p. 43.)

GELATIN CAPSULES.

GELATIN CAPSULES, (or, simply) CAPSULES, *Capsulae gelatinosae*, are special forms of envelopes for bad-tasting drugs, and also for other drugs which are to be administered to such patients as show great aversion to taking medicine. There are two kinds, those which are already charged with medicines and sold as such, and those which are sold empty. Among the first-mentioned class are capsules containing copaiba, cubebs, cod-liver oil, castor oil, etc. These capsules, made and filled at the factory, have an oval shape, a length of 1.0 to 1.5 centimeters, are entirely closed, and of a shining exterior. Their preparation *ex tempore* is not practicable. The mass from which capsules are to be made consists of gelatin, mixed with gum-arabic, honey, or glycerin. If the physician prescribes a drug to be dispensed in gelatin capsules, **EMPTY CAPSULES** are used (if the drug prescribed is not contained in the capsules of commerce). The lid *b* is spread over, on the inner side [only along the edge], with gum-mucilage by means of a brush, and placed on the capsule *a* after the latter is filled. The substance with which the capsules are filled must contain no water. Capsules should be placed in layers on clean cotton or soft paper, and dispensed in paste-board boxes.

The composition of the mass from which capsules are to be made may vary considerably, but it should always be such that the drug for which it is intended as a covering should not thereby be subjected to any dissolving or decomposing influence, and the mass should also be composed of easily digestible and inert substances. The following ingredients and proportions, prescribed by the French Pharmacopœia, are those commonly used:

Hard Capsules.

B White gelatin.....	30 parts.
Powdered gum arabic...	30 "
Powdered white sugar..	30 "
Honey.....	10 "
Distilled water.....	100 "

Dissolve on a water bath.

Soft Capsules.

B White gelatin.....	50 parts.
Powdered gum arabic...	15 "
Powdered white sugar..	15 "
Glycerin.....	12.5 "
Distilled water	80 "

Dissolve on a water-bath.

Into the mass, while it is moderately hot and still fluid, oval or olive-shaped plugs of tinned-brass or iron (capsule moulds), previously rubbed with olive oil, are dipped. These are set upon thin staves and in the holes of a wooden disk. After the coating has cooled, they are to be dipped into the mass once or twice more. After the lapse of about a minute, the wooden disk is turned alternately backwards and forwards, and in various directions, until the coverings of the metal plugs are as nearly as possible of a uniform thick-

ness, and are tolerably cool. The wooden disk is then put in a moderately warm place.

As soon as the covering is dry enough, it is drawn off from the plug by a sudden, dexterous movement, and the portions of the gelatin-mass projecting beyond the olive-shaped plug is cut off with shears. The little hollow bodies are then placed in the holes of the wooden disk, with the open ends up, and filled with the fluid drug by means of a syringe like those used for subcutaneous injections, provided with a fine canula, or by means of an apparatus having a jet like a wash-bottle. If the filling is too thick to flow readily, it must be made thin enough by being heated.

The openings of the capsules are now to be closed by means of a drop of hot gelatin-solution applied with a hair pencil. The closed capsules are afterwards to be dipped, with the closed ends uppermost, to about a quarter of their length in the gelatin-solution and left to dry in a very moderately warm place.

ELASTIC CAPSULES of various sizes, filled with castor-oil or cod-liver oil, are also kept in the shops.

Although these are very large, it is yet possible to swallow them because of their elasticity. These capsules should be kept in cotton, and so dispensed. The cotton must be very clean and white. Gelatin capsules in spherical form and of somewhat limited capacity, are called **GLOBULES**,

paratus patented in Germany by A. Bergholz (No. 2,448) may be employed for this purpose. Pure gelatin having been first soaked in water, then melted with 6 to 10 parts of glycerin, is spread upon perfectly level plate glass in such amount that, when dry, it will form a sheet of the desired thickness. It is kept at a uniform temperature of 68°-77° F., and will dry up, in 24 to 48 hours, to a clear, transparent, and elastic film. This is now cut into pieces corresponding to the surface of the metallic moulds of which we gave an illustration some time since. Each mould consists of an upper and lower piece; the latter is provided with semi-globular or semi-oval depressions into which corresponding projections of the upper piece accurately fit. A sheet of the elastic gelatin of proper size having been placed upon the lower half of the mould, the latter is warmed to 40° C. (= 104° F.), and the upper half of the mould then pressed on it. After a few minutes the latter is removed. The proper quantity of the medicine to be inclosed having been deposited in each depression, a second disc of gelatin, previously treated in the same manner, is placed over it so that the corresponding halves are exactly situated over each other, and the whole is placed under the press, the upper part of which contains a plate, warmed to 40° C. (= 104° F.), which fits the shape of the capsules exactly. Pressure is now applied, whereby the two halves are united and

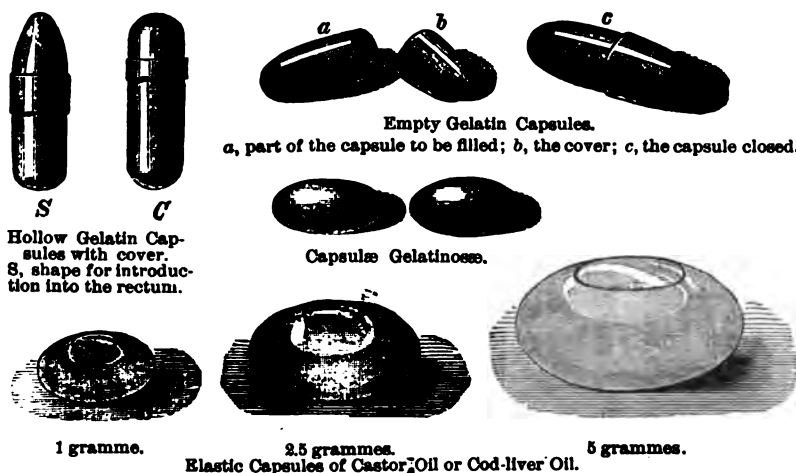
immediately afterwards the upper part of the press is exchanged for another, provided with circular or oval cutters which, when depressed, cuts out the completed capsule from its connection with the remaining sheet.

The filling of empty capsules, at the prescription counter, with various medicines, is a task frequently occurring. When dry powders are to be filled in capsules, in large quantities, some form of capsuling apparatus may be used, for in

stance that of Mr. Thos. Whitfield, of Chicago, which we have already described on page 68 of **NEW REMEDIES** for 1879, and the construction of which is shown by the cut [which see]. The filling of capsules is performed by this apparatus in the following manner.

The plunger at the bottom of the tube beneath the funnel being drawn down by means of the little knob at its bottom, the cap-portion of a capsule is placed, mouth upwards, upon its upper end through the aperture in the front of the tube. The hold on the knob being then released, a concealed spring causes the plunger to rise, and the capsule is pressed firmly against a shoulder in the tube just below the funnel. The requisite amount of powder having been put into the funnel, the long portion or body of the capsule is dropped upon it, mouth downwards, and pressure is made upon the finger plate forming the highest part of the apparatus. This causes a second plunger to descend, and by means of a spiral groove in the sheath through which its guide-rod travels, it is slightly rotated as it descends until it comes directly over the centre of the funnel and is applied to the rounded base of the capsule. Continued pressure rams the capsule home. The first plunger is now again drawn downwards and the filled capsule rolls out.

There are more simple forms of capsule fillers, one of them being that devised by Franklin E. Davenport, of Auburn, Indiana. This consists of a



as has already been said. This form is chosen for very volatile substances, like Ether (hence *Perles d'éther*). These globules are made, according to Thevenot, in the following manner. A portion of the mass, consisting of gelatin, gum-arabic, sugar, and honey, is rolled out flat and laid on an iron plate of the thickness of 0.6 centimeters, in which are holes 1 centimeter wide. The still pliable mass by its own weight sinks into these holes and forms in each a hollow hemisphere. After the depressions have been filled with a mixture of equal parts of ether and alcohol, a second plate is laid on the capsule-mass and on this plate an iron plate, whose holes correspond exactly to those in the first one, is pressed by means of a suitable screw-fastening, and the whole apparatus is so turned that the upper plate comes over the under one, and concavities are formed here as in the former case. The apparatus is then placed between two iron plates, and forcibly pressed together.

There is now a special apparatus for this manufacture, the *Capsulateur* of the Apothecary Viel (Tours) the arrangement of which does not conform to the process above described. The principle of which this arrangement is to compress tubes, made from the capsule-mass and filled with the fluids, into the form of capsules or globules, by means of pincers made specially for this purpose.

[NOTE OF ED. AM. DRUGG.—An ap-

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

funnel flattened at one side (c) to help in taking up the material. The funnel has a tube *b* attached, both being made of one piece without seams. The tube is inserted into the empty capsule, the material is poured in the funnel and pushed into the capsule by means of a plunger, *a*. There are as many sizes of funnels and plungers as there are sizes of capsules.

Reymond's capsule-filler consists of three blocks of wood, one of which contains holes just large enough to permit the capsules being inserted one-half of their length. Another block fits over this, and is perforated with holes corresponding to that in the first block, so that the whole of each capsule is within one of the holes. A third block fits upon this, into which funnel-shaped holes are bored, which are large enough to receive all the powder. The latter is pushed into the capsules by means of a plunger or tampon, and the capsule afterwards closed in the usual manner.

When no apparatus is at hand, and capsules are to be filled by hand, an empty capsule of the same size as is to be filled may be placed upon one scale-pan, together with the proper weight of the material to be introduced. The powder being placed upon a piece of smooth paper, one of the empty capsules is charged with powder by means of a tampon, or better, a small flat spatula. The cap being put momentarily on, it is laid on the empty scale-pan, and if it weighs too much or too little, the excess or deficiency is corrected by withdrawing from or adding to the contents.

This method may seem tedious at first sight, but it will be found to work extremely well, particularly if large quantities of capsules are thus to be filled, for instance, such as contain sulphate of quinine in a dry state. Of course, this must be first reduced to a very fine powder. In handling capsules by hand, many persons will soon observe that their fingers become sticky, and that the exterior of the capsules, when they have been touched by the fingers, becomes damp and liable to retain some of the powder. This is, of course, due to the perspiration of the skin. All trouble from this source may be overcome either by using gloves or by dipping the ends of the fingers previously into collodion. The impermeable coating thus produced will absolutely prevent any moisture from affecting the outsides of the capsules. When filled, each capsule should be carefully brushed off with a camel's-hair brush. As a rule, there is no need of gluing the cap of the capsule, though this may be done if it fits loosely.]

REMEDIES FOR EXTERNAL USE.

These are prepared in a manner similar to that mentioned under Mixtures. Volatile oils or alcohol holding resins in solution must always be added to fluids containing less alcohol, or such as are of a watery nature, and this process must not be reversed, so as to secure as fine a subdivision of the precipitate as possible.

If two substances which enter into a mixture produce precipitates, or cause some substance to separate by coming in contact with each other, they should always be mixed in a *diluted* state. If tinctures, gums, or emulsions enter into the mixture, they should be added to the saline solution before the final mixing takes place. By this means heavy or thick-flaked segregations are avoided.

SALTS OF LEAD mixed with salts containing **TANNIN**, or with sulphates, yield heavy precipitates. With **OPIMUM**, a heavy separation is likewise produced. Corrosive sublimate produces heavy precipitates with **GUMS**, **OPIMUM**, and substances containing albumen, as does also nitrate of mercury (*Liq. Hydrargyri Nitratiss*).

Physicians deem it desirable to have these particles held in suspension; this may may often be effected by a trifling addition of gum arabic. If, for instance, camphor in solution is to be added to a watery mixture, in which the camphor would be precipitated again, an addition of gum arabic will be quite effectual, and the separated camphor will remain in suspension for several minutes after the mixture is shaken.

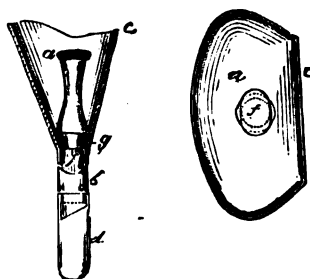
℞ Hydrarg. chlor. corros. gr. 15
Spirit. camphor. fl. ʒ 1
Aque destill. fl. ʒ 10
M. D. S. Lotion.
(Nota Receptarii :)
Mucil. acaciæ. gr. 45
Addita.

Herein the corrosive sublimate is first to be dissolved in most of the water; the *spir. camph.* to be mixed separately with 45 grains of mucilage of gum arabic and a little water, and then added to the sublimate solution.

EYE-WASHES AND INJECTIONS.

Eye-washes, *Collyria*, and injections, *Injectiones*, resemble each other very much as regards their composition, and may, therefore, be discussed together.

Every substance that is insoluble or



Davenport's capsule filler.



Capsule filler.

difficult of solution, which is an element of a fluid intended to be used as an eye-wash or as an injection, must under all circumstances be triturated as fine as possible, first by itself, and then with a suitable portion of the fluid, and this even when it is taken from a stock apparently already in a fine division.

Every palpable substance causes pain in the eyes. On this account solutions of salts for eye-washes should not be prepared by making hot saturated solutions, because on cooling small sharp crystals are precipitated; for example:

℞ Boracis pulv. 10.0 [gr. 150]
Solve in
Aque Rosæ 100.0 [fl. ʒ 8 ʒ]
D. S. Eye-wash.

At the ordinary temperature, 1 part of borax is dissolved by 12 parts of water. The finely-powdered borax is mixed with the water, shaken repeatedly, and the undissolved portion separated by straining or filtering. The word *solve* shows that the physician requires a solution. On the other hand, should the prescription read thus:

℞ Boracis pulv. 10.0 [gr. 150]
Aque Rosæ 100.0 [fl. ʒ 8 ʒ]
M. D. S. Injection,

a different mode of preparation is demanded, as it clearly calls for a mixture. The powdered borax is to be triturated in a mortar as finely as possible, first by itself and then with the addition of some water mixed with the remaining cold water, and thus dispensed.

Cuprum aluminatum * (*Lapis divinus*) does not make a clear solution in water, because the camphor is always liberated. If the prescription does not direct straining or filtration, both of these processes are necessarily excluded. In order, therefore, that the liberated particles of camphor which float on the upper surface of the fluid be rendered as fine as possible, the *Cuprum aluminatum* should first be dried and then subjected to continued trituration with the addition of a few drops of water. An addition of mucilage would cause the camphor to be held in suspension. For this purpose from two to three times as much gum arabic as *Cuprum aluminatum* is added to the mixture.

The mixtures for eye-washes and injections sometimes produce precipitates. The dispenser must be careful that these do not become granular.

Solution of chloride of iron or sulphate of iron with acetate of lead, or sulphate of zinc or alum with acetate of lead, in solutions with mucilage, require careful mixing in order to obtain, as far as possible, a uniformly opaque mixture. If but one of these salts, with mucilage of gum arabic, or of quince, is to form part of the mixture, both the salt and the gum are first to be diluted with water, each by itself, if the prescription so permits. The two diluted substances should then be mixed. If two or three of these salts with gummy fluids are to be constituents of a solution or a liquid, each of the salts, as well as the gum, is to be diluted with water separately before being added to the mixture.

The following will serve as an example:

℞ Zinci Sulphatis, 2.0 | gr. xxx.
Plumbi Acetat., ʒss. |
Ammon. Chloridi, 1.0 | gr. xv.
Aluminis. ʒss. |
Mucil. Acaciæ. 5.0 | f. ʒ iss.
Aque Rosæ. 120.0 | f. ʒ iv.
M. D. S. Shake before using. Inject three times daily.

Here the alum and sulphate of zinc are to be dissolved, together with the chloride of ammonium, in 60.0 (2 fl. oz.) of rose water, and the mucilage added. The acetate of lead is then dissolved by itself in the remaining 60.0 (2 fl. oz.)

Both solutions are then to be mixed, the latter being poured into the former.

℞ Zinci Sulphat. 0.5 | gr. 8.
Plumbi Acetat. 1.0 | gr. 15.
Ext. Opii. 0.4 | gr. 6 ʒ.
Acaciæ. 10.0 | gr. 150
Aque destill. 200.0 | fl. ʒ 6 ʒ
M. l. a. (lege artis). S. Injection.

Here the sulphate of zinc and also acetate of lead are to be separately dissolved, each in 50.0 (f. 3 xvi.) of water, and then the extract of opium and acacia are to be dissolved in 100.0 (f. 3 xxvi.) water. The solution of sulphate of zinc is then mixed with the latter, and after a thorough shaking the solution of acetate of lead is added to it.

Both of the solutions of salts may also be first mixed with one-half of the gum solution containing opium extract, and finally these two fluids mixed together. In this way solutions are often obtained which are but slightly turbid, while neglect of this

* *Cuprum aluminatum* is prepared by melting together 16 parts each of sulphate of copper, nitrate of potassium, and alum (each in powder) in a porcelain capsule, then removing from the fire and adding a mixture of 1 part each of powdered camphor and powdered alum, pouring out and breaking the mass in pieces.

rule will result in the formation of a fluid with a considerable precipitate.

Solutions of nitrate of silver are dispensed in dark-colored bottles.

SOLUTIONS FOR HYPODERMIC INJECTIONS.

Hypodermic or subcutaneous injections were introduced in comparatively recent times. The instrument for effecting this operation is a small syringe, which in this country is called merely "hypodermic syringe," but on the continent of Europe usually named after one of the originators: "Pravaz's [or Luer's, or Leiter's] syringe." The instrument is too well known to require description here.

Hypodermic or subcutaneous injections require to be as clear fluids as are obtainable, and the use of water of the greatest possible purity, and which is entirely free from vegetable matter or germs. [Hager recommends doubly distilled water.] Every liquid to be used as an injection, when not perfectly clear, must be filtered directly into the vessel in which it is to be dispensed. It is indispensable that the vessel, the funnel, and the filtering paper employed be absolutely clean and free from dust. If this precaution is not observed, abscesses are apt to supervene at the sites of puncture.

Complaints are often made that inflammation and suppuration of the punctured places results from morphine injections, which do not occur at another time to the same patient, although the identical morphine is employed. The physician may attach the blame to the preparation of morphine, while the apothecary may prefer to believe that the patient has a predisposition to suppurating sores. The reason in both cases is the quality of the water, and the idea that distilled water must always be pure water is demonstrated to be erroneous.

[This is not always the case. A very prolific source of suppurative abscesses after hypodermic injections in the impure condition of the point or canula of the syringe itself. Unless very carefully cleansed after each injection, minute particles of blood or tissue may and will adhere to the syringe, particularly just inside of the orifice, as may often be verified by examining with a lens. A fresh injection administered by such a syringe is very apt to dislodge the adhering impurity and thus introduce a morbid germ which is sure to result in an abscess.—ED. AM. DR.]

If glycerin is to form part of an injection it must be as nearly pure as possible, or otherwise it may act very injuriously.

Substances which do not yield clear solutions, as for example many extracts, should not be filtered, but should be dissolved in perfectly pure water, and the solution passed through a pellet of glass-wool [or purified cotton].

PAPER-FILTERS require to be cleansed before being used for filtration and should be filled two or three times with distilled water, and after the last water has drained off, the filtration of the fluid for injection may be proceeded with.

[NOTE BY ED. AM. DRUGG.—The preservation of hypodermic solutions or similar liquids is often a matter of some importance. While it is the rule to prepare hypodermic solutions freshly when wanted for use, yet it is often inconvenient to do so, and it becomes necessary to keep on hand a moderate quantity of such a solution. When the substance in solution is an alkaloid (such as morphine, atropine, hyoscyamine, cocaine) or other delicate organic substance, the utmost care must be used in the preparation of the solution, so as not to introduce any substances that might either form a sediment or cause the development of fungi. To prevent the latter, various substances may be used, but only with

the concurrence of or by direction of the prescriber. Among these substances are boric acid, salicylic acid, carbolic acid, and the like. The most efficient and the least objectionable of all preservatives is *chloroform water*, that is, distilled water saturated with chloroform, about two minims being required for each fluidounce. Hypodermic injections of morphine (Magendie's solution), solution of cocaine for use in the eye or hypodermically, solution of atropine, etc., if made with pure distilled water, carefully filtered through pure washed filtering paper, and then saturated with chloroform, will generally keep for a very long time. Filtration, of course, can only remove mechanical impurities; the chloroform, however, prevents the development of germs or bacteria. Such solutions must be kept in well-stoppered bottles, to prevent the loss of chloroform. These solutions have been practically tested in the public hospitals, and the chloroform has at no time been found objectionable.—ED. AM. DR.]

LOTIONS, EMBROCATIONS, SOLUTIONS FOR EXTERNAL USE, GARGLES, ETC.

These are solutions, mixtures, decoctions, infusions, etc. Generally the same rules hold good, regarding their preparation, as apply to similar preparations for internal use. There are a few combinations, however, which require special attention.

CHLORIDE OF LIME, *Calx chlorata*, is to be triturated with the vehicle, and the watery mixture freed from the coarse, sandy particles by decantation. If *Liquor calcis* is prescribed it is understood to mean a filtered solution of one part of chloride of lime in 8 to 10 parts of water prepared cold. This latter should be dispensed in dark-colored bottles.

CALOMEL, *Hydrargyri chloridum mite*, should not be mixed by mere shaking, with a fluid of which it is to form a part, as for instance lime-water, but must first be triturated in a mortar with a portion of the vehicle.

CORROSIVE SUBLIMATE, lime-water, and opium solutions. According to the order in which these three substances are mixed, fluids of different constitution are obtained. If corrosive sublimate is first put into a bottle and the tincture of opium or solution of extract of opium added, and last of all the lime-water, a solution results which does not yield a yellowish-red precipitate of oxide of mercury. This precipitate, however, is desired by the physician. The sublimate must therefore be first shaken with the lime-water and the opium added last of all.

If **CORROSIVE SUBLIMATE** is prescribed with **EXTRACT or TINCTURE OF OPIUM** in aqueous solution, the opium ingredient must first be mixed with one-half of the water, and the corrosive sublimate dissolved in the other half, and the two liquids then mixed together.

Tincture of opium, **extract of opium** form insoluble combinations with most metallic salts. They are consequently only added to solutions of metallic salts when diluted with water.

In many other cases also, the dispenser will guard against undesirable results if he carefully marks the order in which he adds each constituent to a mixture. Should he not do this, it may easily happen that when a repetition of the prescription is wanted, it may differ materially from the first. It is trouble wasted to enlighten the patient as to the reasons for the change.

Phosphorus is dissolved by being heated in a test-tube into which it has been put with the solvent, by being repeatedly dipped into hot water and agitated in it. If ether is the solvent, the solution is effected by (cold) maceration. Care must be taken that no undissolved particles of the phosphorus remain suspended in the liquid, to

prevent which, after the solution has become cool, the dissolved portion is carefully decanted from that which is undissolved or remains as sediment. In using turbid solvents, it is safe to put the phosphorus into a large test-tube, and to cover it with so much of the solvent that it cannot be acted upon by the air. The bottom of the glass is then heated by means of hot water until the phosphorus melts, when it is made into little balls by cautious shaking. The remainder of the menstruum is then added, frequently shaken up, left to settle for one to two hours, and decanted.

At a medium temperature 1,000 parts

Absolute ether dissolve about	10	parts
Official ether	7.5	"
Spirit of ether	1.5	"
Absolute alcohol	2.5	"
Alcohol (90 per cent)	1.	part
Any fixed oil	15.	parts
Petroleum or ethereal oils	20.	"

of phosphorus.

(To be continued.)

Detection of Mineral Oils in Fatty Oils.

THE following process has been proposed by Focke in *Repert. der Anal. Chem.*: 20 Gm. of the sample are mixed with 8-10 Gm. of caustic potassa and 50 C.c. of alcohol [and heated on a water-bath for a short time.—ED. AM. DR.]; the alcohol is then evaporated off, the mass dissolved in water and then decomposed by hydrochloric acid. As soon as the separated fatty acids form a clear layer, the mixture is cooled, the acid aqueous liquid is drawn off with a siphon as much as possible, and the fatty acid washed with fresh portions of cold or lukewarm water, until the washings cease to show an acid reaction. The fatty acids now remaining—which may contain mineral oils or fats—are dissolved in ether, the ethereal solution is filtered, the ether removed by distillation or evaporation, and the residue weighed. Since it is impossible to obtain an absolutely constant weight, it is best to cease heating the residue (with the object of drying) as soon as not more than a few centigrammes are lost by drying during fifteen minutes.

About 10 Gm. of the mixed fatty acids are now weighed in a capacious flask and dissolved in 50 C.c. of alcohol. A little solution of phenolphthalein is then added, and afterwards strong solution of soda (1 in 3) in drops, until a slight excess of soda is present. Before the mixture has time to congeal, 100 C.c. of low-boiling benzin (not over 80° C. or 176° F.) are now added, the whole thoroughly mixed by shaking, and the alcoholic and benzin solutions allowed to separate as distinct layers. When this has occurred, 500 C.c. of water are added, the contents again mixed by repeated gentle agitation, and the flask set aside. When the aqueous soap-solution has separated, it is siphoned off as completely as possible, and the remaining benzin solution treated with another volume of 300 C.c. of water. The former will now refuse to separate completely; in order to obtain a clear benzin solution, as much as possible of the aqueous solution is removed, and 10 C.c. of alcohol then poured in a thin stream and with circular motion through the benzin solution. After five or ten minutes the latter will become perfectly clear, and the larger portion of it can be poured off, while the remainder may be collected by a separating funnel. In place of the 100 C.c. of benzin, only 80 to 85 C.c. of clear benzin solution will usually be obtained. This is poured into a tall beaker placed inside of a broader flat dish, and the benzin evaporated with a gentle heat. Any residue left will be mineral fat or oil.

A NEW THERMO-REGULATOR.

IN our last number we described a drying apparatus recommended by Victor Meyer, in which nearly constant temperatures are produced by the introduction of liquids of known boiling-points. The condensation of the vapor of the boiling liquid is there effected by a plain upright tube (see page 53). That this may sometimes involve some loss of vapor, at least with low-boiling liquids, is not improbable. It is, of course, easy to connect the tube with an upright condenser by which all loss can be avoided. There is one other drawback connected with that apparatus, namely, that the temperature cannot be varied, after the boiling-point of the liquid has been attained, without changing the liquid. These drawbacks—if they may be called so—are avoided in the thermo-regulator constructed by Prof. A. Fock, of Berlin. This consists of a large outer and a smaller inner vessel, made of copper, and having only three outlets, one at *h*, for the insertion of a thermometer and the introduction or withdrawal of a liquid, and the other two, being the tubes *a* and *b*, connecting with the upright condenser. The outer vessel *A* is charged with the liquid, the boiling-point of which is to determine the temperature. The inner vessel is charged with a non-volatile liquid of high boiling-point, such as olive oil or paraffin. When a definite temperature is to be attained, such as may be produced by a liquid of definite boiling-point, the stop-cock at *r* is closed, and the condensed liquid all made to run back into the vessel *A*. The vapors will at first rise into the condenser through both *a* and *b*, but as soon as condensed liquid flows down through *d* and *b*, the vapors will ascend through *a* alone. When a temperature is to be attained for which no special homogeneous liquid is available, petroleum, or better, definite fractions of this may be employed, and enough of this be distilled off (the stop-cock *r* being open) until the temperature of the remainder has risen to the desired point. The stop-cock is then closed, and the condensed vapors will flow back into the vessel. In this way any desired degree of temperature may be more accurately regulated than by any other method.

The interior vessel, *B*, may also be used as a hot air-bath by emptying it of its contents. It is a much better air-bath than if the liquid in *A* were actually in contact with it. In the latter case, variations of three to five degrees would be caused by local overheating due to confined pressure, and other causes. As the apparatus is constructed now, the walls of the inner vessel are constantly surrounded by vapor of an equable temperature.—*After Zeitsch. f. Instrumentenkunde*, 1886, 26.

Chiniodin.

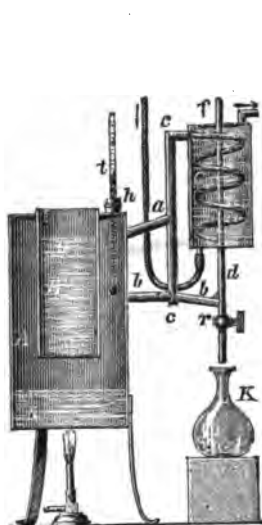
As a supplement to the article on this new antiseptic, contained in our last number (page 46), we have to add that the substance is an addition product of chinoline (quinoline; C_9H_7N), the molecule ICl (chloride of iodine) having been joined to it. Its composition is, therefore, $C_9H_7N.ICl$. It is light-yellow, micro-crystalline, insoluble in water, and difficultly so in alcohol, ether, and other solvents. It strongly resembles chinoline in odor and taste.

IMPROVED FUNNEL HOLDERS.

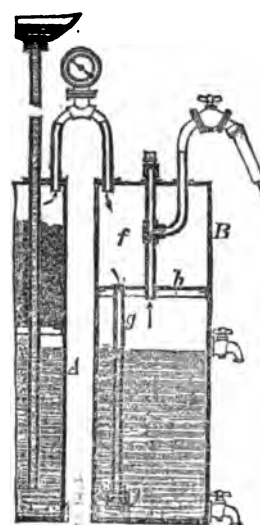
GERICH & Pitschinsky, of Vienna, have introduced a new style of funnel holders, which are not only preferable to others on account of the conical shape adapted to support a funnel with steadiness, but also on account of the ease with which they may be kept clean, as they are made of glazed porcelain. They are fastened by a handle, *S*, into an iron arm, *H*, which may be attached to a retort-stand. The interior of the funnel holders shows three longitudinal ridges, which prevent the close contact of the whole funnel surface with the interior of the holder.—*After Chem. Zeit.*, No. 103.

Japanese Fish Oil.

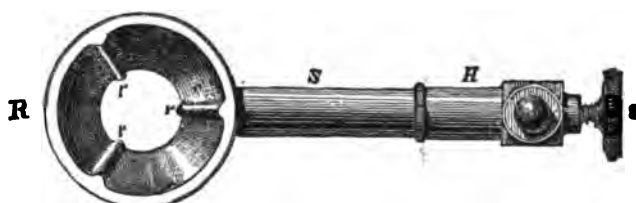
ACCORDING to a French Consular report, in the *Mon. des Produits Chim.*, this article, which has lately been imported into England in enormous quantities, is the product of an industry carried on principally in the neighborhood of Yokohama, by native fishermen. The oil is obtained from herrings



Fock's thermoregulator.



Brinck's apparatus for washing carbonic acid gas.



Gerich & Pitschinsky's improved funnel holder.

and sardines, which cannot otherwise be utilized for want of salt, or means of transport to the nearest market, and is extracted by means of a most primitive *modus operandi*, the fishes being cut up and thrown into the boiling water, and the oil removed as it rises to the surface. After boiling the fish, the remaining oil is pressed out.

It frequently happens that through want of labor the fish are allowed to remain in the water until decomposed, and this accounts for the repulsive smell and dark color of many shipments. The crude oil is sent to Tokio and Yokohama in wooden barrels, containing about $1\frac{1}{4}$ cwt., lined with paper impregnated by glycerin and the juice of unripe Kaki fruit (*Diospyros Kaki*). The oil is refined by heating it to 122° or 140° F. in cast-iron boilers, and then allowing it to cool in wooden tube. When cold it forms three layers—an upper of clear liquid oil, a central of solid grease or fat, and a bottom layer of water, refuse, and albuminous matter. The upper layer of oil is drawn off in barrels for shipment, but the fat is remelted, filtered, and poured into cases while hot.—*Chem. and Drugg.*

APPARATUS FOR WASHING CARBONIC ACID GAS.

THE direction of the arrows in the generator, *A*, indicates the current of the gas. The wash-apparatus consists of a vessel divided by a diaphragm, *h*, into two separate portions. The lower one contains the wash-water, and may be filled or emptied by means of the faucets on the side. A tube, *g*, leads from the diaphragm to near the bottom. The washed gas passes into the tube arising from the diaphragm and thence to wherever it may be conducted. The object of this arrangement will be readily understood. If the gas delivery were to take place through a continuous tube passing to the bottom of the wash-liquid, the latter would flow back into the generating vessel whenever the pressure in the latter would diminish. With the present arrangement, the wash-liquid would be sucked up into the upper compartment, and the risk of its passing into the generator is greatly diminished. This apparatus has been patented in Germany by H. Brinck, of Cologne.

Use of Cocaine Followed by Toxic Symptoms.

SEVERAL more cases have been recorded in which the use of cocaine has been followed by toxic symptoms, and one case, by Dr. Schilling, where amyl nitrite was successfully administered as an antidote (*Med. Chron.*, Feb., p. 397). In this case six drops of a 20-per-cent solution had been injected into the gums of a woman aged 28, to facilitate the extraction of a back tooth. After the tooth had been removed, and the patient was about to leave, her countenance became rigid and she appeared to faint, and in spite of the administration of stimulants she became unconscious. The eyes remained widely opened, and ophthalmoscopic examination showing contraction of the retinal arteries, it was reasoned that there was contraction of the arteries of the brain, and the experiment was made of administering nitrite of amyl. After the inhalation of three drops from a cloth the woman's face flushed and she spoke, and a second and third inhalation at intervals of a few minutes resulted in complete restoration.—*Pharm. Journ.*

Bow's Liniment is a Scotch remedy for chest complaints, and is chiefly used for children slightly colded. The formula is:

Opium..... 1 oz.
Hard soap..... $1\frac{1}{4}$ "
Compound camphor liniment.. 8 "

Digest for several days, and filter. Instead of this, a mixture of opium liniment (2 parts), and solution of ammonia (1 part) is sometimes sold.—*Chem. and Drugg.*

Horehound and Linseed Syrup.—Boil together for ten minutes 1 oz. horehound, 2 oz. linseed, and 1 pint of water. Strain when cold, and dissolve 1 lb. of sugar in the decoction. The product should measure 30 oz.; to this add 5 oz. ext. glycyrrhiz. liq., 1 oz. ess. anisi, 1 oz. spt. chloroformi, and 3 oz. proof spirit. Shake well, and allow to stand for a day before bottling.—*Chem. and Drugg.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,690.—Terebene, Terpene, Terpin, etc., etc. (several subscribers).

As the answer to this query takes up more than the usual amount of space, we have given it as a separate article, headed: *On Terebene, Terpene, Terpin, and Allied Bodies*, on page 63 of this number.

No. 1,691.—Lanolin (M. E. and others.)

Whether the name *lanolin* is protected by a trade-mark or not, we cannot say. From a rather acrimonious correspondence, published in the *Pharm. Zeitung*, between Prof. Oscar Liebreich, of Berlin, and Mr. J. D. Riedel, of same place, in which the former attempts to show the utter worthlessness of a "purified wool-fat" put on the market by the latter, and in which the latter carries on a determined defence, we glean the fact that *lanolin*, a mixture of purified wool-fat and 30 per cent of water, was invented by Dr. O. Braun, who obtained a patent upon his process of purifying wool-fat in 1882.

Regarding the price, we are informed by one of the importers that it will be sold at eighty cents per pound.

No. 1,692.—Gold-Bronze (J. W. B.).

This may be prepared in the following manner: Melt 2 parts of pure tin in a crucible, and add to it, under constant stirring, 1 part of metallic mercury, previously heated in an iron spoon until it begins to emit fumes. When cold, the alloy is rubbed to powder, mixed with 1 part each of chloride of ammonium and sublimed sulphur, and the whole inclosed in a flask or retort which is imbedded in a sand-bath. Heat is now applied until the sand has become red-hot, and this is maintained until it is certain that vapors are no longer evolved. The vessel is then removed from the hot sand and allowed to cool. The lower part of the vessel contains the gold-bronze as a shining gold-colored mass. In the upper part of the flask or retort chloride of ammonium and cinnabar will be found.

No. 1,693.—Sulphate of Copper in Cones (Ed. W.).

There are several ways in which cones or sticks of sulphate of copper may be prepared.

1. Selected crystals, free from fissures, are put into a lathe and turned into cones, a rasp being used as tool. This requires care and practice.

2. Grind properly shaped crystals upon a slowly turning wet grindstone, holding the crystal so that the base of the cone will look towards you and the pointed end away from you. This is the easiest way.

3. Reduce crystals of sulphate of copper to powder, moisten with a little water and heat in a porcelain crucible or capsule until the mass is melted. Roll it out quickly into cones or sticks.

4. Mix ten parts of finely-powdered sulphate of copper and two parts of finely-powdered borax, moisten with a little water and roll out into sticks or cones. Dry them in a lukewarm place. If the two powders are rubbed together in a heated wedgewood mortar, the mass becomes so plastic that it may be formed into cones without difficulty. Sometimes, however, it "sets" very quickly. In this case a little water may be added.

5. The preceding may also be melted together in suitable forms and allowed to set.

No. 1,694.—Algin (Ett.)

This interesting substance, of which we have given a very full account in our volume for 1885, page 146, and which promises to be of wide applicability, forms the subject of an English patent (No. 13,433, Oct. 11th, 1884) granted to the discoverer, Mr. E. C. C. Stanford, F.C.S., of Dalmeir, Dumbar-tonshire, who will probably be able to supply the article in quantities.

Algin appears to be a remarkable substance. It is really an acid, forming salts with bases. The alginates of alkalies and of magnesium are soluble, nearly all the remaining, insoluble. Some of them have characteristic colors, the copper-salt being blue, the iron salt brown, etc. The alginates of the alkalies may be used for stiffening fabrics; the magnesium salt as a mordant; many metallic alginates in the preparation of water-proof fabrics; those of the alkaline earths for artificial bone; those of iron, cobalt, copper, nickel, and chromium for artificial horn (colored); the sodium and ammonium salt, mixed with ammoniacal solution of shellac, as a substitute for gutta-percha, etc.

No. 1,695.—Herbarium of Medicinal Plants (B.).

You will probably succeed in obtaining the herbarium specimens of American medicinal plants by applying to Mr. M. E. Hyams, of Statesville, N.C. European specimens may be obtained among other sources from Mr. A. Vigener, apothecary in Biebrich on the Rhine, with whom you might correspond. From a recent paper by Prof. A. Tschirsch, of Berlin, printed in the *Pharm. Zeitung* (Jan. 23d), we see that a Mr. Buysman, of Middelburg, Netherlands, has commenced to issue a collection of medicinal plants, which seems to excel anything of the kind ever attempted before. It is published in series comprising 10 plants, each being represented by a faultless dry specimen, and the flowers and fruit of each being separately furnished, with the details of each. The plant itself is mounted upon paper; such parts as would suffer by drying are preserved in alcohol, and contained in an accompanying vial. Such parts as permit drying are inclosed in a paper-capsule, or are mounted in Canada balsam on a slide. The seeds, for instance, are always together; the sepals and petals, according to their color, mounted upon light or dark-colored paper, the male and female organs also separate, and so that they can be easily detached from the paper to permit closer inspection. The stigmas, anthers, ovules, and other minute objects, are mounted in Canada balsam, so that they may be examined under a lens. This collection enables the beginner to study medicinal plants morphologically even in winter. It is stated that any desired plants will be furnished in the above manner by Mr. Buysmann.

No. 1,696.—Ageing of Cordials, Perfumes, etc. (Metropolis).

Numerous processes have been proposed for "ageing" or "seasoning" freshly prepared artificial liquors and cordials. Of course, there is no process equal to that of actually and literally doing what the term "ageing" implies, namely, to set the liquid aside, properly protected, until it has acquired the qualities desired. It is well known that recently distilled or recently compounded liquids, particularly if they contain volatile and odorous ingredients, require more or less time until their components become sufficiently blended to prevent any of them to predominate over the other. If the temperature of the room in which the vessel is stored does not vary much, and if the vessel is not agitated or moved from time to time, it

requires much longer than if the temperature is subject to periodical changes—warm and cold—and if the container is occasionally shaken. A notable example of the efficacy of either of these influences, or of both combined, is presented by the rate at which certain liquors will age when passing through the heat of one or more summers, or when carried on one or more voyages at sea.

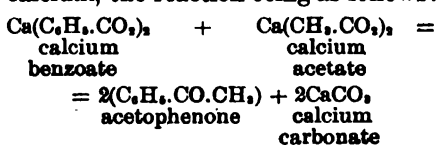
Among the expedients used for hastening the seasoning of such compounds, there is probably none which is better than the judicious application of heat. If the liquid be inclosed in tight containers, with as little air as possible, and it be then raised to a temperature of 24° to 30° C. (74°–86° F.), a notable acceleration of the seasoning will already be observed. But if the heat be pushed to 60°–70° C. (140°–158° F.), and maintained for ten to twelve hours, the liquid will be so thoroughly seasoned that it requires only two or three weeks further rest to pass as "aged."

Though our correspondent has not referred to perfumes, such as essences, handkerchief extracts, colognes, etc., in his letter, we may add that these liquids may likewise be ripened by the cautious application of heat, precautions being taken that nothing is dissipated.

No. 1,697.—Hypnone (Several inquirers).

This new hypnotic, which has long been known as a chemical substance, but the physiological properties of which have only recently been discovered by Dr. Dujardin-Beaumetz and G. Bardat, is not likely to displace the other sleep-producing substance to any great extent. Though it may be a powerful hypnotic, yet it has a very disagreeable taste, somewhat recalling that of creasote, and can only be administered in capsules. It may also be given in oil in which it is soluble, and which appears to be a better vehicle, since the substance, by itself, is quite irritant. More recent experiments of Mairat and Combemale appear to show that it is, properly speaking, not a hypnotic, but produces a condition only remotely resembling sleep. However this may be, it will require further study to decide the merits of the substance.

Hypnone is a name of convenience for the proper chemical name, *acetophenone* or *acetyl-benzol*. This substance belongs to the class of ketones, that is, those organic compounds which contain the group CO combined with two (either identical or different) monatomic alcoholic radicals, either of the fatty acid series or of the aromatic series. In the special case of *acetophenone*, the group CO is associated with *benzyl* (the group C₆H₅, derived from benzol: C₆H₆), and with methyl (CH₃). It may therefore be called *benzyl-methyl-ketone*, or, since the group C₆H₅ is more appropriately considered as *phenyl* (from phenol: C₆H₅.HO), it may be, and in fact is usually named *phenyl-methyl-ketone*. Further, since the groups CO.CH₃ = C₆H₅O are also comprised under the single name *acetyl*, the above compound has received the name *acetyl-benzol*. It is prepared by distilling a mixture of benzoate and acetate of calcium, the reaction being as follows:



There are various other methods by which it may be obtained.

When pure, it forms large crystalline laminae melting at 20.5° C. (68° F.); it is, therefore, liquid at any temperature above this; according to Stadel & Kleinschmidt; see Bellstein, *Org.*

Chem., 1667), boiling at 202° C. (395.6° F.), and having the spec. gr. 1.032 at 15° C. (59° F.).

When bromine (1 mol.) dissolved in carbon disulphide is gradually added in the cold to acetophenone also dissolved in carbon disulphide, and a stream of dry carbonic acid gas be passed through the mixture, the bromine displaces one atom of hydrogen in the methyl group (CH₃) and forms monobrom-acetophenone, or simply called: bromacetophenone. This substance crystallizes with great facility, is insoluble in cold or boiling water, but very easily soluble in alcohol, ether, and chloroform. It is remarkable for its property of violently exciting tears in the eyes. Possibly it may turn out to have some useful physiological effects.

No. 1,698.—Crude Animal Oil and Dippel's Animal Oil (L. & Co.).

The crude animal oil, or more correctly "crude animal volatile oil" is a by-product in processes where animal matters containing nitrogen are subjected to high heat. It is not always collected, being sometimes allowed to run to waste; but where considerable quantities are regularly obtained (as in the manufacture of yellow prussiate of potash or of animal charcoal), it is collected and disposed of for various purposes.

In its crude state, it is a brownish-black, but slightly viscid, non-transparent liquid of a very disagreeable, burnt, or fetid odor, a sharp alkaline taste, and a strong alkaline and disagreeably bitter taste. It is lighter than water, and only partially soluble in it. Of alcohol, it requires 3 parts for solution.

Dippel's animal oil is the preceding after being rectified. It has the synonyms: *Oleum animale æthereum* (rectificatum), *Oleum Cornu Cervi* rectificatum, *Oleum animale Dippelii*.

The crude oil is first distilled from a retort standing on a sand-bath, with a moderate heat, as long as a thin liquid passes over, which amounts to 30 or 40% of the original oil. The distillate is a thin, nearly colorless oil of disagreeable odor which was formerly used as "Dippel's oil" without further purification. It should be still further purified, however, which is best done by heating it in a retort with 4 times its volume of water, over a free flame. The steam carries over about one-half of the oil, so that the final yield is about 15-20% of the crude oil originally employed. The oily distillate floating upon the water must be separated immediately, and transferred to small vials which must be completely filled, well stoppered, and kept under water.

The crude animal oil contains various volatile substances, among them chinoline, pyrrhol, pyridine, picoline, lutidine, methyl-, ethyl-, and propylamine, etc. When rectified, the pyridine, picoline, lutidine, and amine bases remain mostly behind in solution in the water of the retort, while the first-mentioned ones (and some others) pass over. It is owing to the presence of these bases, that the oil soon becomes brown when exposed to light and air.

This is the substance from which iodol is said to be prepared. See our preceding number, p. 45.

No. 1,699.—Kaskine (Several Inquirers).

We have received several communications inquiring about the substance sold under the name of kaskine, and advertised as having been used with great success as a substitute for quinine, in prominent hospitals and by members of the medical profession.

Regarding the nature of the article in question, we have to say that it appears to be, according to Dr. Frederick Hoffmann, editor of the *Pharm. Rund-*

schau, nothing else than white sugar in fine granules. We have no reason to entertain any doubt of the correctness of this statement, since we have ourselves failed to find in it any trace of other substances. The parties interested in its sale evidently had made up their minds that the substance needed no careful weighing nor any special manipulations of the dispensing pharmacist, since they accompany each bottle by a little wooden cup to measure out the doses. This method of excluding the services of the pharmacist also diminishes the risk of having undue attention drawn to the remarkable statement made on the label that *kaskine* is derived from *bitumen*, a statement which any one having had a training in chemistry would denounce as nonsense.

As to the claims of the Kaskine Company, that the substance has been used in certain hospitals of New York City, one of the editors of this journal, who has official charge of all the medical supplies furnished to the public hospitals belonging to the city, desires to state that no kaskine has ever been purchased for any of the public institutions, nor has any kaskine ever passed through his hands, among the medical supplies, either purchased or sent as free samples. It is quite possible that samples of it have been sent to some member of the medical staffs connected with the institutions—just as hundreds of other samples are annually sent or handed to them privately.

We are requested by those members of the Medical Board of Bellevue Hospital, whose names appear on the circulars of the Kaskine Company—Profs. A. L. Loomis and F. R. S. Drake—to state that the use of their names has been wholly unauthorized, and that legal proceedings have been commenced against the offending parties.

One of our correspondents is a physician who says that he has accepted, during the last few years, many new remedies—under various oddly sounding names—without any suspicion as to their bona fide character. He mentions kairine, thalline, pelletierine, and antipyrin, and says that new chemicals follow each other so rapidly in modern therapeutics that the busy practitioner has no time—even if he had the ability—to study their chemical properties or to assure himself of their legitimacy, being compelled to rely upon the reports of specialists in pharmacology or of professional chemists.

Having had occasion, however, to try a sample of the article, he speedily discovered its utter uselessness as a remedy in malarial affections, and having failed to find any mention of it in the current medical or chemical literature, he made up his mind that it belonged to the large class of nostrums which exist and flourish by advertising.

To us the name kaskine appears to have been very appropriately chosen for the proximate principle usually put up in sugar—"casks."

No. 1,700.—Tonga (N. O.).

When *tonga* was first put on the market, some years ago, as a specific for neuralgia, a good deal of mystery surrounded the drug. The firm which claimed the exclusive control of it, did not divulge its origin and even succeeded in establishing its legal right to the name or trade-mark "*tonga*." It was, however, shown that the drug, which was derived from the Fiji Islands, consisted of the inner bark of *Premna taitensis* (Nat. ord. Verbenaceæ), and the stem of *Raphidophora vitiensis* Schott (Nat. ord. Aroideæ), which latter has been shown by Brown to be identical with *Epipremnum mirabile* Schott.

Compare NEW REM., 1882, pp. 55, 162, 211.

The word *tonga* has been applied to various plants in other countries, without it appearing that the name has been carried from one place to the other. It is such a facile name or word, that it may well have originated spontaneously in widely different countries. We have found it applied to the following, besides the neuralgic remedy spoken of above:

1. *Tonga* is the Peruvian name of a beverage prepared from the fruits of *Datura sanguinea* R. et P. (= *Brugmansia bicolor* Pers.), the "blood-red thorn-apple," a native of Peru and Colombia. This *tonga* is used by the native inhabitants in a diluted condition, as a soporific. The concentrated "*tonga*" appears to be a powerful excitant, since it is stated to produce attacks of mania. It is related that the priests of the sun-temple at Sago-moza, the seat of the Indian oracle, chewed the seeds of the above plant for the purpose of obtaining inspirations (*Rosenthal, Synopsis plant. diaphor.*, 8vo, Erlangen, 1862, p. 453).

According to Prof. Hieronymus, this beverage, which is called both *tonga* and *manga* in Peru, is prepared from the seeds of *Datura Metel* L.

2. In Proyard's History of Loango, Kakongo, etc. (Paris, 1776; in Pinkerton's Collection (London, 1814), vol. xvi., 554), it is stated that "*tonga* is the name of an oblong fruit of the size of an egg, which incloses a quantity of pippins of the size of a lentil. From 50 to 100 grow upon one stalk 2 or 3 feet high. The *camba* differs from the *tonga* only by being flat instead of round. The fruit grows in Provence; it is there called *berengenne*."

This is evidently the *Solanum esculentum* L. (or *S. Melongena*), which is called in some parts of Provence *beringene*; in Spanish *berinjena*; Portuguese *berinjela*. (See also Nemnich, Wörterbuch, p. 1,318, where the word is spelled *tongu*; and the word *camba* appears as *mecumba*.)

It is remarkable that the word *tonga* should thus have been employed by the natives of Peru and of Africa to denote closely allied plants, both possessing narcotic properties; and that the same word should have been employed in the Fiji Islands to designate a domestic remedy [at least; so it is reported] having anodyne properties likewise. However, in the latter case we are in doubt about the antiquity of the term, and suspect that it is comparatively modern, having probably some connection with the geographical name of the Tonga group of islands—at no great distance from the Fiji group—the larges of which is Tonga Tabu or "holy (tabu) island (*tonga*)."

No. 1,701.—Quebracho (Boston).

The sample of quebracho bark you sent us is from *Aspidosperma Quebracho* Schlechtendahl, and is, therefore, the kind which has been found to be medicinally valuable. If a pharmacognostic examination is impracticable, as, for instance, when the bark is powdered, the following test may be applied, which, according to George Fraude, is characteristic of the alkaloid aspidospermine.

Boil 5 Gm. of the finely-cut or powdered bark with about 25 C.c. of coal-tar benzin of low boiling-point for about five minutes, filter hot, and shake the scarcely-colored filtrate with about 10 C.c. of very dilute sulphuric acid. Separate the aqueous solution containing sulphate of aspidospermine, add ammonia in excess, then 10 C.c. of ether, and shake. Separate the ethereal solution, evaporate it (in a test-tube), then add to the residue a little water, 3 or 4 drops of sulphuric acid and a very minute quantity of chlorate of potassium, and boil. The perchloric acid thus generated produces an intense fuchsine-like color.

The term *quebracho* signifies "breaker," and is supposed to refer to the hardness of the wood, which is apt to break the axe that is used to fell the tree. The name is, however, applied to a number of different trees, chiefly to the following:

1. *Aspidosperma Quebracho* Schlechtendahl. Domestic name: *quebracho blanco* ("white quebracho"). Nat. ord. Apocynaceæ, a tree growing to the height of 50 feet, and to a diameter up to 3 feet. *Hab.* Brazil and Argentine Republic, also some portions of Chili.

2. *Loxopterygium* (or *Quebrachia*) *Lorentzii* Grisebach. Domestic name: *quebracho colorado, qu. negro* ("colored or black qu."), from the darker color of the heart wood. Nat. ord. Anacardiaceæ, attaining as large a size as the preceding. The wood of this tree is exceedingly difficult to hew or plane, and is therefore used wherever extremely hard wood is preferable.

The wood of this tree has been found by Dr. Penzold to possess anti-asthmatic properties, like the preceding, but in a less strong degree. Other observers found it inert. We do not think that any of this is imported now.

3. *Jodina rhombifolia* Hooker et Arnot. Domestic names: *quebracho flojo* ("flexible qu.," so named in the province of Córdoba, Argentine Republic); *sombra del toro* ("bull-guard," in the prov. of Tucuman); *peje* ("fish," in San Luiz, Mendoza, San Juan, and Córdoba); and *quinchilin* or *quinchirin* in Córdoba. Nat. Fam. Illiciaceæ. *Hab.* Argentine Republic and Uruguay. Grows to a height of some 24 feet, and up to 1 foot in diameter.

4. *Machaerium fertile* Grisebach (= *M. Tipa* Benthams). Domestic name: *tipa*. Has also been named *quebracho*, according to some writers, but Prof. Hieronymus, of Córdoba, who has been quoted as the authority for this (see *NEW REM.*, 1880, 111), does not mention this name in his work, "Plantæ Diaphoricæ Floræ Argentine," 8vo, Buenos Ayres, 1882. In fact, he says that its wood may be worked with facility. This tree attains a size similar to that of Nos. 1 and 2. Nat. Fam. Leguminosæ. *Hab.* Northern Provinces of Argentine Republic.

The diminutive name *quebrachillo*, or *quebrachilla*, is also applied to such trees or shrubs as *Berberis spinulosa* St. Hil., *Berberis ruscifolia* Lam., *Maytenus ilicifolia* Mart. (the leaves of which are used for adulterating maté), and *Acanthosyris spinescens* Griseb. (*Osyris spinescens* Eichler).

No. 1,702. **Manufacture of Caffeine and Guaranine** (Dr. B. H. McC.).

We see no reason why it should not pay to manufacture caffeine in this country, now that chloroform is made on the large scale by an improved process which does away with the employment of alcohol, and in consequence of which the price of chloroform has fallen to nearly one-half of what it used to be.

Assuming that the identity hitherto believed to exist between caffeine and theine will continue to be recognized in the future, and that it will, therefore, be immaterial whether caffeine is made from coffee and theine from tea-leaves, or vice versa, it is left to the judgment and convenience of the manufacturer to choose either the one or the other crude product.

On page 32 of our last February number, we gave a short process for assaying the quantity of caffeine present, which process is there erroneously attributed to Prof. Hilger as author. It should have been stated that the originator was E. Fricke, and that Prof. Hilger merely reported on the process.

The method of assay there given would probably be found to be too tedious, if expanded into a manufacturing scale.

Besides, it has recently been stated (by Dr. C. Rübesamen in the *Chem.-techn. Central-Anzeiger*) that it yields a yellow-colored caffeine, contaminated by wax, resin, and other impurities.

In preparing caffeine from coffee, it is not necessary to grind the latter. The crude, green beans are covered with boiling water, about one gallon of the latter being used for each pound of coffee, the mixture allowed to stand twenty-four hours, and the liquid then drawn off. The beans will now be seen to have swelled up, and they may be completely exhausted by a second treatment with about three-quarters of the previous amount of water, draining the liquid off after some twelve hours, and washing the remaining beans with a little more boiling water. The united liquids are treated with solution of acetate of lead, which causes the precipitation of most of the other constituents accompanying the caffeine, the residual clear liquid (together with the washing of the precipitate) neutralized with freshly prepared hydrated oxide of lead, and the filtered or decanted liquid then deprived of lead by hydro-sulphuric acid. [Sulphuric acid might be used, but the precipitated sulphate of lead is apt to run through filters. Besides, the free acetic acid remaining in the liquid in either case is objectionable. On a small scale, when trying the above process, we have found it best to precipitate by sulphate of sodium, allowing to deposit by standing and evaporating the decanted and filtered liquid with well-washed animal charcoal to dryness, and extracting with chloroform, by which method a very fair product was obtained. We have also evaporated the original solution still containing lead and the caffeine, without first precipitating the former with sulphate of sodium, but the resulting product was more yellowish. The additional precipitation probably helps to remove some more of the coloring matters still present. Our experiments were not made with a view to decide upon the merits of these particular points, but the above observations were made, *en passant*, while preparing caffeine from coffee (for some special uses) without regard to the quantity of the yield or the economy of the process.]

The liquid, deprived of lead and filtered, is heated to boiling and passed through coarsely powdered, purified animal charcoal, after which it is concentrated and crystallized. The best and most detailed directions for working the process will be found in *Chemische Fabrik von Dr. Eduard Stieren*, München, 1865, p. 583.

Guaranine.—If you wish to extract this substance, which is recognized as identical with caffeine, from guarana, you may use the method lately recommended by Bochefontaine and Gosset, in *J. de Pharm. et Ch.*:

Mix 5 parts of finely powdered guarana with 1 part of calcined magnesia, and moisten the mixture with a little water, which will cause it to assume the appearance of a grayish dough, turning reddish after twenty-four hours. Then extract the mass, in a suitable apparatus, three several times with 40 parts of chloroform [or exhaust it with chloroform in a continuous extraction apparatus], and recover the chloroform by distillation. The impure alkaloid thus obtained is dissolved in boiling water, the liquid filtered, and allowed to evaporate over sulphuric acid. By repeating the crystallization several times, very handsome, colorless silky crystals or shining bunches of crystals are thus obtained. 100 parts of guarana yield about 4.5 parts of the pure alkaloid.

Dr. Rübesamen, already mentioned before, gives the following hints by which perfectly colorless caffeine

(theine) may be obtained after Mulder's process. The filtrate, separated from the precipitated sulphide of lead, in the process given on page 32 in this JOURNAL, or in the process given above, is evaporated, mixed with pure magnesia and perfectly pure quartz sand (previously treated with hydrochloric acid, water, etc.), and then the whole brought to dryness. The dry mass is placed into a triple filter, the inner and outer one being pure washed filtering paper, and the middle one being pure asbestos paper. The filter also rests upon a pad of pure asbestos. The filters with the substance having been placed into a continuous extraction apparatus, chloroform—perfectly colorless and free from water—is used for exhaustion.

The boiling of the chloroform must be conducted very slowly; in fact, this appears to be one of the most important points to be observed, according to the author.

Formulae Wanted.

We have inquiries for the composition or mode of preparation of the following:

1. Ely's Cream Balm.
2. McDade's Succus Alterans.
3. Haynes' Arabian Balsam.

If any of our readers can give the desired information, we shall be much obliged.

CORRESPONDENCE.

Ayer's Cherry Pectoral.

EDITOR AMERICAN DRUGGIST:—Several journals have published formulas of Ayer's Cherry Pectoral, but none that I have seen are correct so far. The following will give an identical preparation in appearance, flavor, color, odor, and probably lacks nothing in the original.

B Morphine Acetatis.....	grs. iij.
Tr. Sanguinaria.....	3 ij.
Vini Antimonii.....	
Vini Ipecac.....	5ā 3 ij.
Ext. Pruni Virginianæ Fl.....	3 ij.
Ol. Amygd. Amar.....	7iij.
Syrupus Simp., q. s.....	3 viij.

M.

D. S. WHITE,
Druggist.

FLANDREAU, DAKOTA, March 16th, 1886.

Camphor Balls.—

I.

White vaseline.....	8 parts.
Paraffin.....	3 "
Almond oil.....	1 part.
Camphor.....	1 "

Melt the fatty ingredients together, add the camphor, and stir until cold.

II.

Martindale's form.—

Spermaceti (cut small).....	4 oz.
White wax (cut small).....	12 "
Oil of almond.....	5 "

Melt in a water-bath, and add

Flowers of camphor .. 4 oz.

Dissolve, and when nearly cold, pour into boxes, or mould in gallipots.—*Chem. and Drugg.*

Modelling Wax.—

Clear wax.....	200 parts.
Venice turpentine.....	26 "
Lard.....	18 "
Precipitated bole.....	145 "

Mix, and knead the mass in water.—*Chem. and Drugg.*

FORMULAS.

Sachet Perfumes.

1. *Cassie Sachet.*

Cassie flowers, ground.....1 lb.
Orris root, powd.....1 lb.

2. *Frangipanni Sachet.*

Orris root, powd.....3 lbs.
Vetiver, grd.....½ lb.
Santal wood, grd.....½ lb.
Vanilla, grd.....½ lb.
Tonka beans, grd.....2 oz.
Oil Neroli.....60 m
" Santal.....40 m
" Bergamot.....60 m
" Geranium, French.....60 m
" Rose.....80 m
Ext. Musk.....1 oz.
" Civet.....½ oz.

3. *Heliotrope Sachet.*

Orris root, powd.....2½ lbs.
Rose leaves, grd.....1 lb.
Vanilla, grd.....6 oz.
Tonka beans, grd.....4 oz.
Ext. Musk.....½ oz.
" Civet.....½ oz.
Oil bitter Almonds.....7 m

4. *Lavender Sachet.*

Lavender flowers, grd.....2 lbs.
Benzoin, powd.....2 oz.
Oil Lavender, French.....1 oz.
Ext. Musk.....1 oz.

5. *Rose Sachet.*

Orris root, powd.....1½ lbs.
Rose leaves, grd.....1½ lbs.
Santal wood, grd.....4 oz.
Patchouly, grd.....2 oz.
Ext. Civet.....½ oz.
Oil Geranium, French.....80 m
" Rose.....20 m

6. *Jockey Club Sachet.*

Orris root, powd.....3 lbs.
Santal wood, grd.....½ lb.
Oil Bergamot.....1 oz.
" Rose.....80 m
Ext. Musk.....2 oz.
" Civet.....1 oz.

7. *Patchouly Sachet.*

Patchouly leaves, grd.....2 lbs
Orris root, powd.....½ lb.
Oil Patchouly.....80 m
" Geranium, French.....80 m

8. *Verbena Sachet.*

Orris root, powd.....3 lbs.
Oil Bergamot.....120 m
" Verbena.....180 m
" Geranium, French.....80 m
Ext. Musk.....½ oz.

9. *Ylang-ylang Sachet.*

Rose leaves, grd.....1 lb.
Cassie flowers, grd.....1 lb.
Pimento, grd.....½ lb.
Tonka beans, grd.....2 oz.
Vanilla, grd.....2 oz.
Orris root, powd.....3 lbs.
Oil Pimento.....60 m
" Bergamot.....120 m
" Geranium, French.....60 m
" Ylang-ylang.....120 m
" Rose.....20 m
Ext. Musk.....1 oz.
" Civet.....½ oz.
Benzoin, grd.....1 oz.

10. *Violet Sachet.*

Orris root, powd.....3 lbs.
Oil Bergamot.....80 m
" Almonds, bitter.....20 m
" Rose.....20 m
Ext. Musk.....1 oz.

11. *Rondeletia Sachet.*

Arris root, powd.....3 lbs.
Lavender flowers, grd.....1½ lbs.
Oil Geranium, French.....80 m
" Bergamot.....120 m
" Cloves.....120 m
" Lavender, Engl.....120 m
" Rose.....20 m
Musk pods, grd.....1 oz.
Ext. Ambergris.....1 oz.
Cloves, grd.....½ oz.

12. *New-mown Hay Sachet.*

Orris root, powd.....4 lbs.
Tonka beans, grd.....½ lb.
Vanilla, grd.....½ lb.
Oil Almonds.....10 m
" Geranium, French.....120 m
" Rose.....80 m
" Bergamot.....60 m
Ext. Musk.....1½ oz.

—After *Chem. and Drugg.*, Feb. 15th.

NOTE.—In place of vanilla and tonka beans, the artificially prepared principles vanillin and cumarin may be used. For each ounce of vanilla use 12 grains of vanillin, and for each ounce of Tonka beans, use 10 grains of cumarin.

—Ed. AM. DRUGG.

Remedy for Corns.

Phosphorus.....1 part.
Oil of Sesame.....200 parts.
Yellow Wax.....80 "

To the oil of sesame, contained in a bottle, add the phosphorus, and heat the bottle in a water-bath until the phosphorus is melted. Agitate the bottle from time to time closing it with a stopper, until the phosphorus is dissolved. Then add the oil to the wax previously melted and partly cooled off. Introduce the mixture, while still fluid, into tubes, close, and label them.

Each of these tubes is packed in a box together with 10 corn-rings or corn-guards.

The application of the remedy is made as follows. One of the perforated corn-guards having been attached to the corn so that the latter occupies the central opening, enough of the corn-remedy is pressed from the tube, to fill the central space. This may be done mornings.

[Here we could suggest to make the corn-guard so that a flap shall be attached to the ring which may be folded over, when the central opening is filled, and thus cover the latter.] In the evening a warm foot-bath should be taken, the softened corn then gently scraped, and a new application made as before. This is repeated mornings and evenings, until the corn has disappeared.

Mr. Adolf Vomacka, who recommends the above preparation in his *Neue Ideen*, also states that good results have been obtained by using the following:

Salicylic Acid.....10 parts.
Venice Turpentine.....5 "
Acetic Acid, concent.....5 "
Collodion.....80 "

Antiseptic Mouth-wash.

Oil Peppermint.....20 parts.
" Staranise.....8 "
" Anise.....8 "
" Cinnamon, Ceyl.....2 "
" Rose.....1 "
" Cloves.....4 "
Chloroform.....40 "
Tinct. of Ambergris (1 in 5).....4 "
" " Vanilla (1 in 5).....20 "
" " Orris Rt. (1 in 5).....42 "
" " Cedar (1 in 8).....2000 "
" Aseptic " Acid.....30 "

The above compound is said to be both very efficient and very pleasant. The "aseptic" acid is a compound consisting of 5 parts of borax, 3 parts of peroxide of hydrogen, and 92 parts of water. It arrests putrefaction and destroys malodorous effluvia. It is said to be especially useful as a mouth-wash in mercurial salivation and atonic ulcers of the gums.—ADOLF VOMACKA in *Neue Ideen*.

Naturae Novitates. Bibliographie neuer Erscheinungen... über Naturgeschichte und exacte Wissenschaften. [Catalogue of new publications of all countries, in all branches of natural history and the exact sciences.] 8vo. Friedländer Sohn. Per year, 4 marks.

BIBLIOGRAPHY.

THE CALENDAR OF THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN. 1886. London. Printed for the Pharm. Soc. of Great Britain. 1886. pp. 519, 8vo. 1/.

THIS book contains the existing laws relating to pharmacy in Great Britain, the by-laws of the Society, list of the members and of duly registered persons engaged in the business, and such laws and general information as is appropriate for a work of this character.

YEAR BOOK OF PHARMACY, with the Transactions of the British Pharmaceutical Conference at the twenty-second annual meeting. London: J. & A. Churchill, 1885, pp. 566, 8vo. 10/ and postage to non members.

THIS annual volume contains an abstract of the pharmaceutical literature of the preceding year, most of which has appeared in *extenso* in the *Pharm. Journ. and Trans.* It is always valuable, and is handsomely published. It might well be included among the desirable works in any pharmaceutical library.

LECTURES ON SYPHILIS. Delivered at the Chicago College of Physicians and Surgeons by G. FRANK LYDSTON, M.D., etc., reported by WM. A. WALKER, A.M., M.D. Chicago: A. M. Wood & Co., 1885, pp. 184.

THIS is a work primarily intended for the information of medical students, and in its present shape is especially adapted for their needs as regards its contents and form. The writer adopts the pathological views of Dr. F. N. Otis, of New York, and dedicates his work to his former instructor, Dr. Jos. W. Howe, of this city. The subject is very clearly and fully considered and the book will doubtless be a valuable aid to the student.

From Eduard Hirschsohn, Mag. Pharm., St. Petersburg.

1. Beitrag zur Chemie der Siam-Benzö (Contribution to the Chemistry of Siam Benzö).

2. Ueber das Verhalten der Harze von Pinus silvestris L. und Picea excelsa Lk. gegen Reagentien.

(On the behavior of the resins of P. s. and P. e. towards reagents.)

3. Beitrag zur Kenntniss der Xanthorrhoeaharze.

(Contribution to the knowledge of Xanthorrhoea resins.)

Reprints from *Pharm. Zeitschr. f. Russl.*

NEUE IDEEN. ("Aus der Praxis für die Praxis.") Von ADOLF VOMACKA, Pharm. Mag., Redakteur der "Rundschau," II.

(Continuation of "Unsere Handverkaufsartikel" and "Neue Ideen I,") 16mo, Prag, 1886. Subscription Price, 1 mark.

THIS is a most useful publication from the pen of one of the most advanced pharmacists of the Continent, whose push and enterprise even as a merchant is something quite phenomenal. The little book before us is the second series of practical handbooks containing valuable information for the busy retail pharmacists, and formulas for all kinds of articles he is required to keep in stock. Intending subscribers should address the author at Prag (II. Brenntegasse 13).

Geissler, E., and Moeller, J. Real-Encyclopädie der gesammten Pharmacie. [Encyclopædia of Pharmacy, to be published in 5 large volumes, of about 700 pages each, at 15 marks a volume, unbound.] 8vo, Wien.

Hell, G. Pharmaceutisch-technisches Manuale. I. Pharm. Theil. 3te Aufl. 8vo, Troppau. m. 8.50.

American Druggist

Vol. XV. No. 5.

NEW YORK, MAY, 1886.

Whole No. 143.

[ORIGINAL COMMUNICATION.]

INK FOR TYPE-WRITER RIBBONS.

BY ISIDOR FURST.

EVERY one who is in the habit of using the type-writer has probably felt the inconvenience of sending the ribbon to be re-inked, not to speak of the likelihood of receiving in return for a new ribbon an old one, all worn out and good for nothing. Hence the question is often asked of scientific periodicals, How should the ribbons be re-inked?

The writer has passed through the same experience, and has tried several of the directions given in reply to the above question, with the uniform result of spoiling a good deal of material, in the shape of ribbons, paper, chemicals, etc., besides wasting much valuable time. Having made a number of experiments in this direction, I beg to submit the result to the readers of the AMERICAN DRUGGIST.

The requirements of type-writer ink are: When applied to the ribbon, it should dry sufficiently so as not to stain the paper which it touches, remain soft enough to print clearly wherever the ribbon is struck by the type, and contain enough coloring material to make the ribbon last a long time without re-inking. Two kinds of ribbon are supplied by the manufacturers: the "black record," the coloring matter of which consists of carbon and is permanent; and the "copying" which contains aniline colors, gives print which can be copied in an ordinary copying press, but is liable to fade in course of time.

Black Record Ink.—Take vaseline (petrolatum) of high boiling point, melt it on a water bath or slow fire, and incorporate by constant stirring as much lampblack (or powdered drop black) as it will take up without becoming granular. If the fat remains in excess, the print is liable to have a greasy outline; if the color is in excess, the print will not be clear. I am unable to give the proportions more definitely, as I have not made ink enough for manufacturing purposes, but no difficulty will be found in practice. Remove the mixture from the fire, and while it is cooling mix equal parts of petroleum benzin and rectified oil of turpentine,* in which dissolve the fatty ink, introduced in small portions, by constant agitation. The volatile solvents should be in such quantity that the fluid ink is of the consistence of fresh oil paint. One secret of success lies in the proper application of the ink to the ribbon. Wind the ribbon on a piece of cardboard, spread on a table several layers of newspaper, then unwind the ribbon in such lengths as may be most convenient, and lay it flat on the paper. Apply the ink, after agitation, by means of a soft brush, and rub it well into the interstices of the ribbon with a stiff tooth-brush. Hardly any ink should remain visible on the surface.

For blue "record" ink, Prussian blue may be substituted for the lamp-black.

Ribbons Charged with Aniline Colors.—Take about three ounces of water, dissolve in it about a quarter of an ounce of transparent glycerin soap in fine shavings, add one ounce of glycerin, heat the mixture to about 120° F., remove from the fire, and add one-half ounce of the desired aniline

color, with constant agitation. This ink can be painted on the ribbon with a soft brush and needs no tooth-brush to rub it in. Nor need the ribbon be taken from the machine in this instance, but the ink can be applied as the ribbon is wound from one spool to the other. If applied hot, it will dry quickly enough on the ribbon. All inks containing glycerin are more or less hygroscopic, and the ingredients may have to be varied somewhat in quantity, according to the season. For instance, in stove-heated rooms in winter, the air is generally so dry that less soap will be required, while in summer more soap may be needed to give the ink sufficient body.

In conclusion I beg to remark that I do not claim that the processes here given furnish the best results, but they are superior to any I have seen recommended elsewhere. If any of your readers can suggest anything better, I should be happy to try again and let you know the result.

NEW YORK, April 2d, 1886.

[ORIGINAL COMMUNICATION.]

HOPS AS A MYDRIATIC.

ON page 70 of the April number of the AMERICAN DRUGGIST, I find an editorial article on the supposed discovery of the active principle of hops, and called by the discoverer hopeine, in which it is stated that it is similar to, if not exactly identical with morphine.

That there may be such an active principle I will not deny, but there is also another principle that is directly antagonistic to this action, or, in other words, something very much resembling atropine in its action.

I have in my possession, the notes of a very marked case where the action of this kind occurred, and the patient was, by the expansion of the pupil, rendered totally blind, except in a room where the light was almost wholly excluded.

The facts taken from my note book of February 13th, 1884, are as follows:

One of the workmen employed in the iron-plating shop in the Navy Yard, N. Y., called at the surgeon's office, and stated that he had been attacked with severe neuralgic pains over the right eye, and that in order to relieve the pain, he had applied a hop poultice to the part affected, the poultice covering the eye, and remaining in this position all night. On removing the poultice the next morning, the pupil of the eye was found to be dilated to such an extent as to nearly obliterate the iris, making the patient totally blind in this eye, but not affecting the other in any way.

The dilatation was very persistent, continuing for nearly a week before the pupil finally recovered its normal size and condition.

The only treatment resorted to was, to keep the light entirely excluded by means of a shade, and as the patient complained of a sensation of heat and a sort of burning pain, he was told to make frequent applications of cold water.

I will state that I examined carefully at the time a portion of the hops from which the poultice (which was the form in which they were used) was made, and could find no trace of any foreign substance. They were in a fresh state, and the lupulin was very plentiful.

I was at the time very much surprised, but on making inquiries among some medical friends who had from time to time attended persons employed around the different breweries

of this city, they told me that they had noticed the same phenomena in the men who came in direct contact with the steam which rises from the hot fomentations made directly from the hops, but up to that time they had not thought to attribute the cause to any action of the hops, being rather inclined to ignore it altogether, as it soon passed away, and after a time they did not suffer any more than a temporary inconvenience, lasting only a few minutes on coming into a strong light. Owing to want of time and the facilities for carrying out the experiments necessary to arrive at the exact truth of this matter, I was forced to abandon it for the time, and it had not occurred to me again, until I saw this article in your journal.

Z. A. J.

Constituents of Hops.

Now that the constituents of hops are being more closely studied, it is worth while to mention that V. Griesinger, who (in 1874) isolated from hops an alkaloid which he called lupuline, now believes that this was probably choline. At the same time he believes that this choline is a product of the decomposition of lecithin, and that only the latter exists in hops. (*Allg. Zeitsch. f. Bierbrauer*, 1885, 1003.)

According to L. Fries, hops contain about 1 per cent of asparagin. Hence about 30 per cent of the nitrogen contained in an extract of hops are derived from this substance. (*Zeitsch. f. d. gesammte Brauwesen*, 1885, 267.)

Regarding a peculiar effect produced by hops, which may possibly be due to the presence of a body not yet isolated, see the communication of "Z. A. J.," printed elsewhere in this number.—ED. AM. DR.

COMMERCIAL CREAM OF TARTAR.*

BY E. H. W. STAHLHUTH, PH.G.,
OF CINCINNATI.

AFTER giving an account of the origin, mode of manufacture, properties, and commercial relations of cream of tartar, the author makes a report of the results of his examination of a number of commercial samples. He says:

Samples were obtained from large and small cities in Ohio, Indiana, Kentucky, and West Virginia. Ten were from drug-stores and ten from grocery stores, Nos. 8 and 15 being obtained from wholesale houses. Four samples were also obtained direct from manufacturers, their best article being specified. The pharmacopoeial and other tests were applied as explained below.

METHOD OF ANALYSIS.

A small quantity of the sample was placed in a test tube and shaken with distilled water acidulated with nitric acid; one portion was tested for chlorides with nitrate of silver; the other for sulphates with chloride of barium.

A weighed quantity of the sample was placed in a vial and shaken with an excess of aqua ammonia. The contents were then poured upon two filters, counterbalanced, and placed one within the other.

When the liquid had drained through, the filters and contents were washed with distilled water rendered alkaline by ammonia, until a drop of the filtrate evaporated on a glass rod left no residue (unless sulphate of calcium was present). The filters and contents were then dried on a water bath and weighed, using the outer fil-

* Benzine alone evaporates too quickly, turpentine too slowly; the mixture of the two has answered best in my hands.

* Abstract of a Thesis presented to the Cincinnati College of Pharmacy.

ter for a counterbalance. (The ammonia combines with the bitartrate of potassium to form double tartrate of potassium and ammonium, which is very soluble.)

Alum, if present, will be decomposed, aluminium being precipitated as hydrate which is insoluble in excess of ammonia.

Acid phosphate of calcium, if present, is also precipitated by ammonia.

But little impurities pass through the filters; the insoluble portion is therefore a fair estimate of the impurities. The solution in ammonia was tested for metals with sulphide of ammonium.

To the insoluble portion was added dilute hydrochloric acid. This will dissolve it with the exception of starch and plaster of Paris. Effervescence would indicate chalk. To the hydrochloric acid solution was added excess of ammonia; a precipitate would indicate alum.

The precipitate was filtered out, and to the filtrate was added oxalate of ammonium; a precipitate indicates calcium. The portion not dissolved by hydrochloric acid was boiled in distilled water, allowed to cool, and test solution of iodine added. Starch or flour will produce a blue coloration. If a residue remained after repeatedly treating with boiling water and hydrochloric acid, it was probably plaster of Paris, and was subjected to direct tests.

To those samples that were not adulterated, the U. S. P. tartrate of calcium test was applied: 1 Gm. was digested for one-half hour with 5 C.c. dilute acetic acid, then diluted to 500 C.c. and filtered, and to 25 C.c. of the filtrate 5 C.c. test solution of oxalate of ammonium added. It should not become cloudy in less than one minute, nor distinctly turbid in less than one minute and a half. Absence of more than $\frac{6}{100}$ tartrate of calcium (U. S. P.).

Tests of phosphates were also applied, according to Attfield, but only one gave the reactions. Those samples adulterated with alum contained moisture equivalent to the water of crystallization of the alum, all others were anhydrous. All tests were confirmed by other tests.

SUMMARY AND RESULTS.

The samples obtained from manufacturers were all as represented. They contained from 99.9 to 99.75 per cent of pure cream of tartar.

Those from drug stores were all nearly pure, containing but little tartrate of calcium, while not one was adulterated. Of the samples obtained from grocery stores but one was pure; that was in a one-quarter-pound package, and was sold at fifteen cents per package.

Two samples were substitutes, and consisted of bicarbonate of sodium. It would appear that the dealer made a mistake, but both claimed that it was cream tartar, and not baking soda. One of these was sold at ten cents per pound, while the other was sold at cream tartar prices. The other seven samples were grossly adulterated; the adulterants were: alum, starch, plaster of Paris, acid phosphate of calcium, and chalk. [The elaborate table appended by the author is omitted, as the main results are given above.—ED. AM. DR.]

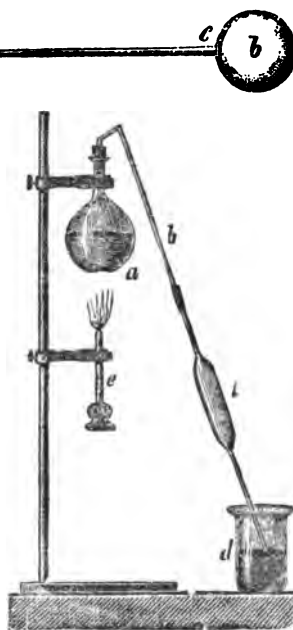
Decomposition of Iodide of Potassium in Water.

ACCORDING to J. Mühe, iodide of potassium dissolves in water without partial decomposition only when the water is free from carbonic acid. In testing iodide of potassium, therefore, it is advisable always to use well-boiled water and a perfectly neutral solution of starch.—*Pharm. Centralt.*, 1886, 55.

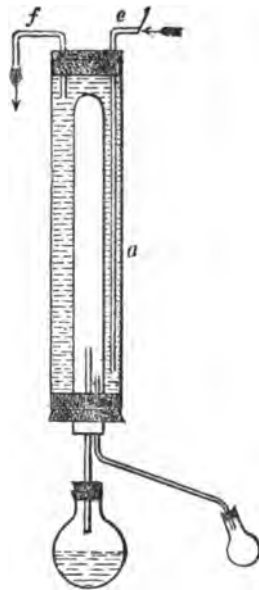
THE DETECTION OF ARSENIC IN FABRICS.

SWEDISH law prescribes the method by which arsenical mirrors are to be developed in hygienic analysis, namely, through the reduction of sulphide of arsenic, by means of soda and cyanide of potassium in a current of carbonic acid gas. No directions are given how the sulphide of arsenic is to be obtained, probably because it was supposed that sufficient uniformity already existed in this respect. In order to afford others an opportunity of following the same method, the official analyst at Stockholm sends a description of it to the *Chem. tech. Central-Anzeiger* (Dec. 17th).

100 square centimeters of wall-paper



The detection of arsenic in fabrics.



New form of Liebig's condenser.

(supposing this to be the object of the analysis), or 3 Gm. (45 grains) of wall-paper color dried at 100° C. (212° F.) are placed into a flask 'a' having the capacity of about 300 C.c. (10 fl. oz.) and 4 Gm. (60 gr.) of crystallized sulphate of iron, together with 50 to 100 C.c. (14 to 28 fluidrachms) of hydrochloric acid, spec. gr. 1.100 are added. Of course, all the utensils and reagents must have been previously ascertained to be absolutely free from arsenic. As soon as the material to be examined has been thoroughly penetrated by the acid, the flask is closed with a cork (not rubber) stopper, bearing the bent glass-tube 'b', to which is attached a 50 C.c. pipette 'c' which dips with its point about 1 cm. ($\frac{1}{4}$ inch) below the surface of 100 C.c. of distilled water contained in the beaker 'd'. The con-

tents of the beaker are then heated to boiling and the distillation so adjusted that it is completed in ten or fifteen minutes. At this time the upper part of the pipette must feel quite hot; if it is not, the distillation must be continued until this point is reached.

The contents of the beaker are then mixed with 100-150 C.c. of hydrosulphuric acid water, as concentrated as possible, and the whole set aside for twelve hours. All sulphide of arsenic will by that time have been deposited, and the liquid is then passed through a small filter (5-6 Cm.). The sulphide of arsenic remaining on the filter is washed thoroughly, and then dissolved in sulphide of ammonium. The resulting solution is transferred to a watch-glass, mixed with soda and dried at 100° C. (212° F.). When the mass is thoroughly dry, it is intimately mixed with soda and cyanide of potassium (equal parts of each), transferred to a reduction tube, and

the mixture there reduced by ignition, a stream of dry carbonic acid gas passing through the apparatus. The reduction tubes have the shape shown in Fig. 2. The mixture is introduced at 'a' so that it may reach 'b'. The current of gas likewise enters at 'a'. When the mixture is melted, the metallic arsenic which volatilizes produces a mirror at 'c'. At this point, the diameter of the tube should be only 1.5 to 2 millimeters. Special attention should be paid to see that the glass of the tube is free from arsenic, a condition which is fulfilled by but very few samples of glass.

This method yields good results. If the reagents are pure, there is a loss of 0.04 milligrammes of arsenious acid, in consequence of the solubility of sulphide of arsenic in the volume of liquid from which it is precipitated.

NEW FORM OF LIEBIG'S CONDENSER.

CHAS. B. GIBSON proposes the form of Liebig's Condenser shown in the illustration. It may be used whenever the liquid in the flask, or collecting in the condenser, is not likely to be ignited by the flame used in heating the contents of the former. And if no open flame, but steam or some other source of heat is used, it may be used even with ether, benzin, etc. Its construction is intelligible without further description.—*The Analyst and Rep. d. Anal. Chem.*, 1886, No. 5.

A Stable Reagent for Glucose.

F. CRESWELL, a late house physician in a London hospital, reports through the *British Medical Journal* a formula for a substitute for Fehling's solution, which he has kept between four and five years without its having lost its sensitiveness as a test for urine-sugar. 35 grammes of sulphate of copper are to be dissolved in 200 C.c. of glycerin and 100 C.c. of water. To this add 80 grammes of sodium hydrate dissolved in 400 C.c. of water, and boil the whole for fifteen minutes. Then add enough water to make 1 liter, and allow it to stand until it is clear. This may be standardized with a solution of grape-sugar of known strength when required for accurate determinations, and needs to be diluted for use. For rough clinical work, this quantity may be diluted to 1,250 C.c., when 10 C.c. will reduce 5 centigrammes of urine-sugar.

In use, 10 C.c. are to be mixed with 50 C.c. of water and boiled in a small flask, and the solution of glucose (which should not contain more than 1%) is slowly added from a burette during constant boiling, until the blue color has disappeared from the contents of the flask. The quantity of sugar-solution used must then have contained 5 centigrammes of sugar.

AUTOMATIC SHUT-OFF FOR GAS-BURNERS.

ON page 67 of our volume for 1884, we illustrated a contrivance for automatically shutting off the supply of gas to a burner in case the flame should at any time go out of its own accord. The shutting off was accomplished by the dropping of a weighted lever, which was maintained in a horizontal position by a metallic tongue, made to project through the effect of the hot flame.

This apparatus has been found to have two drawbacks. One is this, that it requires a considerable space to permit the full drop of the lever-arm; and the second is this, that the temporary holder *e* of the lever which is to retain the latter horizontally until the heated tongue can project far enough to support it, may be forgotten to be released.

These drawbacks are avoided by Mr. H. Rohrbeck in the following manner:

The stop-cock is controlled by a handle which, in its normal position (shutting off the gas), is at a right angle to the supply-pipe, viz., at *e*; it is held by a strong spring, and caused by the latter to return to this position whenever released. On depressing the handle to the position *e*, and pushing over the end of it the tongue *d*, the handle will be held horizontally. If now the gas is lit, the heat of the flame will cause the two spirals situated at either side to expand, and as a consequence of this expansion, the tongue *c* will move forward, engage the end of the handle and release the tongue *d*, which thereupon flies back to its original place. The handle is now held by *c* alone, and should the spirals become cold through an extinction of the flame, this tongue *c* would retract, release the handle *e*, and the latter would at once return to the position *e*, shutting off the gas. As the handle thus turns upwards (instead of falling, which was the case in the older form of apparatus), a stop-cock of this construction may be arranged upon the surface of any work-table.

The pipe bringing the supply of gas may be so arranged that it is held by the clamp of a stand, whereby it may be raised or lowered together with the burner. At *f* is shown a conical chimney, to be made of mica, which may be placed over the flame as shown in Fig. 1.—*Dingl. Polyt. Journ.*

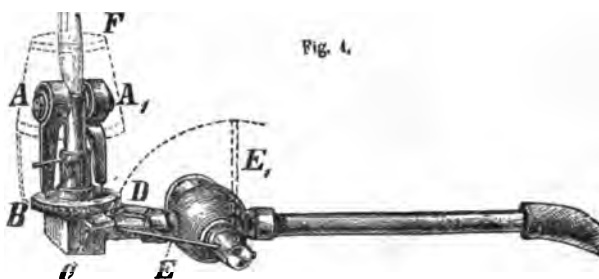
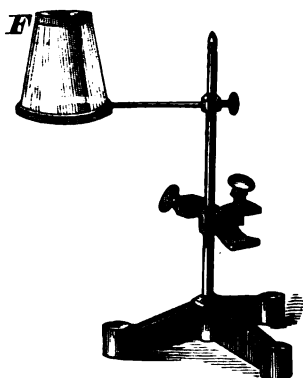
Two gentlemen connected with the Chelsea Vestry (London) reported a joint inquiry relative to the degree of accuracy observed in the dispensing of prescriptions, chiefly in their own parish, and the result, as given by the *British Medical Journ.*, is greatly to the credit of the out-and-out chemist and druggist. Fifty prescriptions were sent out, namely, 30 to chemists and druggists, 14 to co-operative stores, 2 to "doctors' shops," and 4 to certain drug companies. A liberal margin was allowed for errors, no prescription being rated as incorrectly made up if the principal ingredient came within 10% of the amount ordered. Seventeen of the 50 prescriptions were rated as incorrect. In one case, the drug was 85% less than ordered, and in another 57% more than had been ordered. Only two of the prescriptions sent to chemists and druggists were "scheduled," while 3 from co-operative stores, 1 from a "doctor's shop," and 3 from the drug-companies were put on the black-list. In other words, 6% of the chemists' and druggists', 20% of the "stores", 50% of the "doctor's," and 75% of the drug company's prescriptions failed to be satisfactory.

NOTES ON PRACTICAL PHARMACY.*

LOTIONS, EMBROCATIONS, ETC.

TARTAR EMETIC, also *sulphate of zinc* (for itch-ointment) should be triturated to an impalpable powder and only mixed with the fat in the form of a dry powder.

Iodide of Potassium is dissolved in two-thirds of its volume of water and mixed with pure lard or a white fatty base. If the mixture should assume a yellow or brown color, this may be removed by the addition of a few drops of the solution of *hyposulphite of sodium*. If the fatty base is a colored ointment such as *ungt. diachylon, ceratum resinae*, etc., and the mixture takes on a brown color, it is not permissible to remove the color by em-



Automatic shut-off for gas-burners.

playing a corrigent thereof. The use of this corrigent is allowable only when the physician requires a colorless mixture.

Iodine should be powdered in a mortar first by itself and then with about a third of the fatty substance. A few drops of alcohol are then mixed in, and, after rubbing the mixture for a few moments longer, the rest of the fat is added to it. If haloid compounds, such as *iodide of potassium*, *ammonium*, or *metallic salts*, enter into the composition of the ointment, the addition of the alcohol is superfluous, since these salts, with the addition of a little water, either dissolve the iodine or create easily diffusible combinations with it. Ointments of iodine, which contain volatile oils, may be of a brown or yellowish-brown color at first, but they frequently lose this color in a short time and become more or less bleached.

Iodine and Bichloride of Mercury (for example, equal parts) in white ointments with *lard* do not yield red or brown mixtures, but colorless ones. Even if the mixture be colored at first, it very soon bleaches completely.

Chloride of Lime, dry, is to be powdered and mixed with the fat.

If *CHLORIDE OF LIME* is to be mixed with *GLYCERIN*, it should first be mixed with its own weight of water and the glycerin then added to it. If it were to be mixed directly with the glycerin, the

latter would be attacked by chlorine, one of the decomposition-products being a fruity-scented gas which escapes while the action of the chloride of lime is destroyed. Whereas, if it is first mixed with water, it will preserve its active chlorine for at least several hours, or possibly throughout an entire day.

Balsam of Peru should not be mixed either with the whole of the melted fatty substance, or with a part thereof; but in all cases it should first be triturated with a little of the cold fat with the addition of a trace of alcohol, say three to four drops to one gramme of balsam.

AQUEOUS EXTRACTS should be mixed with water, and **ALCOHOLIC EXTRACTS** with diluted alcohol, into a soft paste and then added to the fatty substance.

OPIUM for plain ointment mixtures is made into a paste with two-thirds its volume of water.

CAMPOR should be rubbed to a fine powder with a few drops of alcohol and then mixed with a little olive oil before being added to the fatty substance.

ALCOHOLIC FLUIDS, except in small quantities, cannot be thoroughly mixed with fats, especially when the latter are of a firm consistence. Even if this is possible by heating the mixture, they separate again partially on cooling. An addition of a fatty oil, to facilitate the mixing, makes the ointment too soft. One part of tincture or other alcoholic fluid can be mixed with five parts of the fatty mass, by being agitated with it. When large quantities are to be used the process is performed by the addition of a trifling portion of powdered soap, when this does not cause decomposition of any of such metallic salts as are still to be added. The mixture is effected by so triturating the fat in a mortar that its bottom and sides become coated with a layer of the fat. The spirituous liquid is then to be gradually mixed with it in small quantities. If this precaution be not taken, the mixture

will be very difficult to make. The fatty substance adheres to the pestle and slides about on the bottom of the mortar, which are moistened with alcohol, without clinging to them. By proceeding in the manner above described we can mix a fifth part of alcohol with soft lard, and a sixth part with firmer ointments, although such a mixture does not keep very long. By the addition of a little soap-powder a tolerably permanent mixture is obtained. If the alcoholic fluids which are to be mixed with fat, in addition to the above-named substances, do not contain any very volatile drugs, they may be evaporated in a moderately warm mortar to one-half of their bulk, and the evaporated portion replaced by the fatty substance. This method should always be followed since an ointment which is swimming in alcoholic liquid, or from which the latter exudes on the slightest pressure, is not prepared *lege artis*. For example:

B. Butyri insuli...	15.0	3	1/2
Tinct. opii.....	7.5	fl. 3	2.
Argent. nitratis....	0.12	gr. 2.	
M. f. ungt.			

7.5 grammes [or ab. 2 fl. 3] of tincture of opium are too much to remain mixed with 15 grammes [1 3/4] of the fatty substance. Half of the tincture is therefore evaporated at a gentle heat to a soft mass, and this is dissolved in the other half of the opium tincture, and then 18 grammes of butter are to be mixed with it. (If fresh, unsalted butter is not at hand, a mixture of equal parts of cocoa butter and olive oil may be used in its stead.)

The *nitrate of silver* is to be dissolved in the tincture when the latter has

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

cooled. [It would have been better to make the remark that nitrate of silver should never be prescribed in such combination. Indeed it may be established as a rule, that nitrate of silver should always be given in such form that the eye can detect whether it has undergone any decomposition or not. If it is to be employed as an ointment, it may be triturated and mixed with colorless vaseline. It may not be known to many of our readers, that there is an absolutely colorless vaseline and vaseline oil made in Russia, which is called *Caucasine*. This excels in appearance anything we have ever seen before. We know of no place in this country where it is kept for sale, but it could be easily imported if there is any demand for it. We have a sample, sent by the Russian house, in our possession.—ED. AM. DRUGG.]

R Tinct. opii..... 5.0 | fl. 3 14.
Ungt. hydrarg..... 20.0 | gr. 300.
M. f. ungt. D. S. For inunction.

In this instance the tincture is evaporated to one-half, to which is added 0.5 [8 grs.] powdered Castile soap, and 2 grammes [30 grs.] of fat (to take the place of the alcohol that has been lost) and then mixed with the mercurial ointment.

R Unguenti simpl..... 30.0. | § 1.
Tinct. opii,
Tinct. cantharidis... 5.0 | 5.0 fl. 3 14.
M. f. unguentum.

Here the tincture of opium (5.0 Gm.) is to be evaporated at a moderate temperature, the residue taken up with 5 grammes *tinct. cantharid.*, and after the addition of 1.0 gramme of powdered soap, mixed with the ointment. The tincture of cantharides contains volatile cantharidin, so that it must not be evaporated.

Oxide of Zinc, when used for ointments, in small quantities, should be finely triturated with a few drops of oil of almonds [or olive oil or another bland fatty oil], but when large quantities are required, the mortar is heated and an equal volume of the fatty substance is put in and mixed with it. After the mortar has cooled, the other ingredients are added.

R Zinci oxidi..... 1.0 | gr. 15
Opli puri 0.2 | gr. 8
Ungt. Aquæ Rosæ..... 15.0 | § 1

M. f. ungt. S. to be spread on the edge of the eyelids.

(Nota Receptarii) *opium aqua contritum*.

The *opium* is to be triturated with five drops of water, and then the oxide of zinc with one gramme *Ungt. aquæ rosæ* added to it, the mortar gently warmed, and the oxide of zinc very finely triturated, and after the mortar has cooled, the remaining quantity of *Ungt.* mixed in.

R Zinci oxidi,
Tinc. Benzoini,
Glycerini,
Cetacei,
Ol. Amygdal..... 5.0 | 10.0

M. f. ungt. S.

The oxide of zinc is to be triturated as finely as possible with a portion (4.0 grammes) of the oil of almonds, and then mixed with about 2 grammes [30 grs.] of soap-powder, and then with the rest of the almond oil into which the melted spermaceti had been poured while still hot, and then a mixture of 10 grammes of *tinct. of benzoin* and *glycerin* each, from which 2 grammes of alcohol have been evaporated, is added while still hot, and the mixing is completed by vigorous agitation. The agitation must be continued until the mixture is entirely cool. The foregoing unusual ointments are by no means imaginary examples, but are

taken from practical pharmaceutical experience.

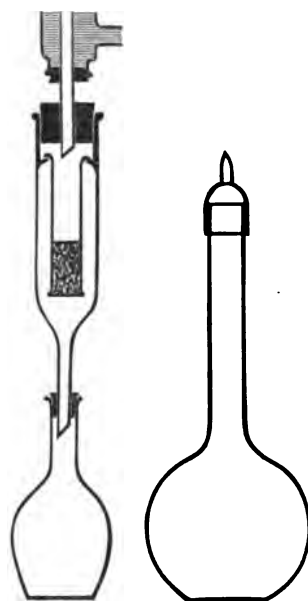
In some cases, the alcohol may be evaporated without the loss of any of the volatile substances dissolved in it. If, for instance, the *mistura oleoso-balsamica* is mixed with some fatty substance and evaporated in a water-bath, the fat absorbs the volatile oils, and only the alcohol is evaporated. The preferable method, however, is to mix the active constituents of the alcoholic fluids with the fatty substance, with omission of a portion of the alcohol, and supplying the loss by fat.

If the salve contains resins, or substances which are easily soluble in alcohol, such as *Unguentum Elemi*, *Unguentum basilicum*, it will easily take up a fifth of its weight of alcoholic fluid by being agitated; for example:

R Unguenti basilici..... 30.0
Tincturæ myrrhæ..... 6.0
M. l. a., ut unguentum molle.

At the ordinary temperature lard will take up about $\frac{1}{4}$ of water, $\frac{1}{4}$ diluted alcohol and $\frac{1}{4}$ of 90% alcohol, if thoroughly mixed with them in a mortar, and will hold them for a long time.

OPODELDOC, *Linimentum Saponato-camphoratum*, is very difficult to mix



Author's apparatus for estimating glycerin.

(See p. 86.)

with fat ointments, especially with blue ointment (*Unguentum Hydrargyri*), and almost impossible when equal quantities of each are employed. When triturated together in a mortar, the spirituous and fluid elements of the opodeldoc separate, and cannot be made to re-unite. Some dispensers carefully mix the opodeldoc and mercurial ointment in ointment pots. This mixture lasts hardly an hour, and, besides, is ill adapted for use in inunctions. Considering that the public readily judges the pharmacist by his productions, and that the physician cannot control the matter (since, if he orders a certain kind of mixture, it is natural to conclude that he thinks it a possible one), the dispenser should not be blamed if he has recourse to innocent expedients for his assistance. On the other hand, the dispenser may and should consider it his duty to put the prescription of a physician who understands little or nothing of the art of dispensing into a form corresponding to pharmaceutical usage, especially if he does not alter the efficacy of the medicine.

The NECESSARY modifications of a prescription should never be kept secret, but noted at length on the prescription.* In the following instance,

* This applies only to Germany. In France any alteration of a prescription is forbidden and punishable by law.

the dispenser adopts the same method that may be used for mixing large quantities of *Mistura oleoso-balsamica* with fatty ointments.

R Lin. Saponato-camphorati,
Unguent. Hydrargyri... 5.0
M. f. ungt.

Here 0.33 grammes (5 grains) of camphor are triturated in a mortar with a few drops of alcohol, 1.0 gramme (15 grains) of soap powder, 1 drop of oil of thyme, 2 drops of oil of rosemary, 15 drops caustic ammonia-water, and 25 drops of alcohol, and to this mixture is added the mercurial ointment and some fat (12.0 grammes, or 3 drachms), to supply the place of the alcohol that has not been added. If the physician desires a superficial mixture of the opodeldoc with the mercurial ointment, he should indicate it on the prescription, for instance, by *ope bacilli vitrei agitetur et miscetur* (stir and mix them with a glass rod).

NITRIC and MURIATIC ACIDS are mixed with fats by agitation in a porcelain mortar, the fat being rendered semi-fluid by heat, and the agitation continued until the mass has become cold, if the prescription directs only a "misce."

FLOWERS OF SULPHUR and BLACK SOAP [this is unknown in this country; the nearest approach to it is *green soap*] should be mixed together and then saturated with boiling water to the consistence of a thin jelly, if the prescription requires dilution with water. Usually as much water is taken as will counterpoise the weight of the sulphur and soap.

If an addition of CHLORIDE OF AMMONIUM is prescribed, the mixture will remain liquid.

BISULPHIDE OF CARBON, when an ingredient of ointments, requires careful handling on account of its great inflammability. During the mixing no flame or burning light must be brought near it, or else the mixing must be done at a distance from the fire. The bisulphide of carbon must be weighed out into a small flask, and at some distance off, the fatty constituent is to be placed in a glass vessel with a wide mouth (opodeldoc-glass) and heated until it becomes semi-fluid. When the glass has cooled until it is barely lukewarm, the bisulphide of carbon is to be added to it and the mixing completed by stirring with a glass rod. The glass vessel is then to be closed with a cork.

Saponimentum is an alcoholic solution of soap resembling opodeldoc.

POWDERS FOR EXTERNAL USE.

These are prepared according to the rules which hold good for the manufacture of powder, but it should be carefully noted that *ERRHINES*, *Pulveres sternutatorii* are to be dispensed in medium fineness; *EYE POWDERS*, *Pulveres ophthalmici*, and *SPRINKLING POWDERS*, *Pulveres adpersorii*, in very fine, and *FUMIGATING POWDERS*, *Pulveres ad suffiendum*, in coarse form.

PILLS FOR EXTERNAL USE.

TOOTH-PILLS, *Pillule antodontalgicæ*, and *FONTANELLE PILLS*, *P. ad fonticulos*, are prepared like pills for internal use; the addition of mucilaginous substances, such as powdered marsh-mallow root, tragacanth, etc., should be avoided as far as possible, unless specially prescribed.

(To be continued.)

Viburnum prunifolium is credited by Dr. W. M. Campbell, of Liverpool, with arresting abortion in a small series of cases, but its action appeared so decided that he is confident of its power. It was customarily given in pill form, the fluid extract having been reduced by evaporation; and three grains, repeated two to four times daily, sufficed to quiet the expulsive action of the womb.—*Brit. Med. Jour.*

DETERMINATION OF GLYCERIN.

REFERRING to the method of Medicus and Full, for determining the amount of glycerin in wine (which was given in abstract in our March number, page 52), C. Amthor published a short paper in which he points out that uniform results by different experimenters can be obtained only when all conditions are rendered alike, and an exact agreement is arrived at regarding each step of the manipulation. He shows that very considerable discrepancies between several assays may occur from the neglect of proper precautions.

Since the method is not only useful in determining glycerin in wine, but also in many other liquids containing glycerin, we will quote Amthor's modification:

100 C.c. of the wine are mixed with 3 grammes of caustic lime and with 10 grammes of coarse quartz-sand previously washed with hydrochloric acid and ignited. The mixture is then evaporated, being stirred towards the end, so that it may assume a granular appearance. When dry, the mass is loosened as much as possible with a knife—the capsule being placed upon a large sheet of paper—then well mixed with a pestle, and transferred into the extraction apparatus (see cut).

The capsule is scoured with 15 drops of distilled water, and this liquid also transferred to the extractor. The last portions of it are washed into the extractor with 2 C.c. of 90-per-cent alcohol. 30 C.c. of 90% alcohol are placed into the flask, the extraction apparatus put together, and the extraction accomplished by heating during six hours under an upright condenser (the lower part of which is only shown in the cut). After allowing to stand over night, the extracted mass is treated with three successive portions of 5 C.c. each of absolute alcohol, in order to wash down any glycerin that may have become vaporized during the cooling. In this manner about 40 C.c. of liquid are obtained, which are evaporated on the water-bath to 20 C.c. 30 C.c. of ether are then added, and the mixture set aside over night. The clear solution is then poured off, the residue washed with 5 C.c. of the same mixture of alcohol and ether, and the ethero-alcoholic solution evaporated in a small flask having a long neck, and which may be closed with a ground stopper. This evaporation or drying should continue precisely two hours in a drying oven at a temperature of 100° C. (212° F.). The weight of the ash [ascertained from a previous experiment, or ascertained from the residue, re-dissolved and re-obtained by evaporation in a crucible] is to be deducted. It is necessary to have some uniform standard for the size and shape of the flask. The author recommends to use a flask of 100 C.c. capacity, with a neck 10 Cm. (4 inch.) long, and 1.5 C.c. ($\frac{1}{4}$ inch) internal diameter (see cut on page 84).

A SAFETY-TUBE FOR EXTRACTION APPARATUS.

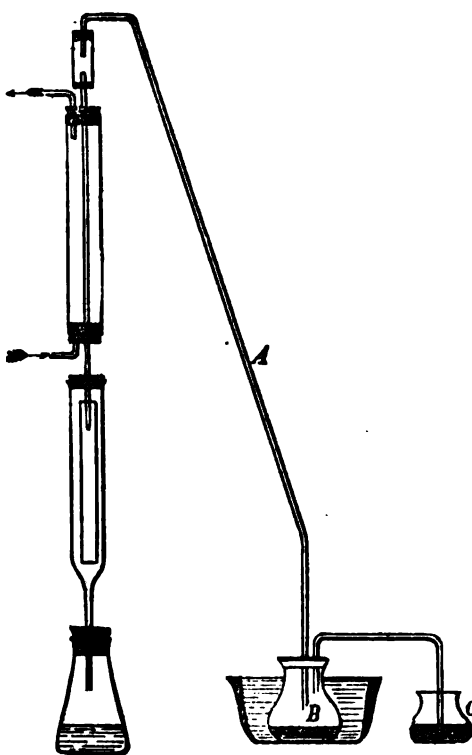
IT is not uncommon that the vapors of volatile liquids used in an extraction apparatus are not completely condensed, and escape into the air, whereby the risk of ignition is sometimes incurred. To guard against this, Mr. Chas. B. Gibson proposes to lead a tube A from the condenser to a flask B, weighted down with mercury, and standing in a vessel full of cold water. A second tube passing through the stopper of B leads to another flask C, also containing a little mercury and some oil. Any uncondensed vapors, when they arrive in the flask C, will be absorbed by the oil.—*The Analyst and Rep. d. Anal. Chem.*, 1886, No. 6.

Kava-Resin as a Local Anæsthetic.

THE discovery of the anæsthetic action of cocaine when applied locally to mucous membranes has stimulated the search after other bodies of similar properties. Several have already been met with, though none of them is able to replace cocaine in all its functions. One of the most interesting of these is a resin existing in *Kava*, the root of *Piper methysticum* Forst., which has been examined by Dr. Lewin, of the University of Berlin, from whose pamphlet* on the subject we take the following statements:

Kawa or Kava (or Ava) has been chemically examined by Gobley, O'Rourke, and Cuzent, who found it to contain, besides the usual plant constituents, a peculiar resin (O'Rourke's "kawin"), a neutral substance (kawahin, or methysticin), and some ether-eal oil.

When the finely-powdered root is thoroughly extracted with hot absolute alcohol, and the resulting liquid deprived of alcohol, there will remain a residue of a greenish-brown color, tough and sticky, and mixed with crystals. This has a peculiar odor, and when it is left for some time in contact with water, it imparts to the latter its odor, and also a faint green-



Gibson's safety tube for extraction apparatus.

ish-yellow tint. It was this residue which formed the starting-point of Dr. Lewin's experiments.

On pressing the residue between filtering-paper, or on drying it in thin layers upon porous plates, brownish-yellow crystals are obtained which may be purified by recrystallization from alcohol, with the aid of animal charcoal. These constitute the substance known as kawahin or methysticin. This may also be extracted by repeatedly distilling the residue with water, as it volatilizes in a current of steam. The kawahin may also be extracted by passing boiling water through the alcoholic residue on a filter. On cooling, it crystallizes in white crystalline needles.

In the last mother-waters remaining after the crystallization of kawahin, there is contained another crystallizable constituent, first observed by Neelting and Koppe, and named by Dr. Lewin *yangonin*, after one of the names, viz., *yangona*, under which the plant is known upon the Fiji Islands. This is evidently related to

the kawahin, to judge from its elementary composition and other facts. Neither of the two preceding substances, however, appears to be of special interest medicinally.

After kawahin and yangonin have been removed from the residue, there remains a resinous mass, a great deal of which is absorbed by the filtering-paper used in pressing, and which may be again extracted from this by cold alcohol. When moderately pure, it forms a soft, yellowish or brownish-green mass, melts by warming, and has a peculiar aromatic odor. On treating this resinous mass several times with boiling water, it acquires a brownish-black appearance. It is soluble in alcohol, ether, chloroform, benzol, carbon disulphide, oil of turpentine, paraldehyde, and acetic acid. With concentrated sulphuric acid, the resinous mass strikes a blood-red color.

It had been reported that this resin decomposes when heated beyond 50° C. (122° F.). Dr. Lewin found it to be absolutely unaltered even when heated to about 90° C. (194° F.).

The existence of several different kinds of resins in this mass is already evident to the eye, inasmuch as the mass has a peculiar striped or variegated appearance, particularly when kneaded in water.

Two resinous substances had already been distinguished by previous experimenters, but Dr. Lewin did not follow their plan in separating them. He preferred the use of boiling petroleum ether. Instead of treating the resinous mass with this solvent, however, it is better to treat the root itself. The petroleum ether will gradually acquire a yellowish-green color, and, on evaporation, re-solution of the residue in alcohol, and evaporation of the alcoholic solution, it leaves behind a yellowish-green oily liquid, which is only slightly sticky and thin-fluid at first, gradually becoming somewhat viscid when exposed in an open capsule.

Dr. Lewin designates this substance temporarily as the *alpha-resin of Kawa* (α Kawa-resin), and remarks that it may possibly hereafter be found more entitled to be called *Kawa-oil*.

This *alpha-resin* (or oil) possesses, in a high degree, the odor and taste of Kawa. It is easily soluble in alcohol, chloroform, and ether, imparts to water boiled with it its peculiar odor, and produces an orange-red color with concentrated sulphuric acid. When dropped on paper, it gradually produces an oily, permanent stain. It dissolves in solution of soda with a yellowish-green color, and the solution remains clear when diluted with water. On boiling the resin with water, the latter turn yellowish-green, and small oil drops collect on the surface; on cooling, the liquid turns milky like an oil-emulsion. The reaction is neutral, and Fehling's solution is not reduced by it, until after being boiled with hydrochloric acid.

Another resin, designated as *beta-resin of Kawa* (β Kawa-resin) may be extracted from the root by absolute alcohol.*

Local Effects of Kawa and its Constituents.—On chewing Kawa, there is noticed at first an aromatic, slightly bitter taste, which afterwards becomes pungent, or sharp and biting like pepper, the sensation depending upon the quantity chewed. During the chewing and for a few minutes afterwards, the quantity of saliva is increased, and it acquires, like the tongue, a yellowish or yellowish-brown color. After the pungent taste has lasted a short time, a sort of numbness is experienced on the tongue which is accompanied by a diminished sensibility to

* "Ueber Piper Mythicum (Kawa)." Untersuchungen von Dr. L. Lewin, Docent der Pharmakologie an der Universität Berlin, 8vo, Berlin, 1886.

* E. Merck, of Darmstadt, prepares both resins, and offers them at 1 mark per gramme for the *alpha-resin*, and 0.30 mark per gramme for the *beta-resin*. These prices would have to be correspondingly increased for importing the articles.

contact. This condition may last many minutes.

Of the constituents of Kawa, the *kawahin* and *yangonin* are entirely devoid of this benumbing power, but the alpha-resin possesses it in a very high degree. Even when only a minute portion is placed upon the tongue, a fatty or soapy taste is noticed, and a sensation of numbness and loss of sensibility supervenes, by which the whole of the gums and other portions of the cavity of the mouth, which may come in contact with the drug, are affected. Some describe the sensation by comparing it to that produced by scalding the mouth with a very hot beverage. This sensation may last for ten minutes or even longer; it is not accompanied or followed by any signs of inflammation, but rather by a slight paleness.

The beta-resin acts similarly, but more feebly.

On introducing a minute piece of the mixed resins [E. Merck also sells this mixture] into the eye, a complete *anæsthesia* of the cornea and conjunctiva is produced in about three minutes, or less time. This condition was found to be quite lasting. On further investigation, it was found that the powder of the root, when introduced into the eye, produced the same effect. A watery infusion, carefully filtered, is, however, entirely inert [no doubt owing to the fact that the resins are insoluble in water]. The most prompt effects are produced by the *alpha-resin*. When first introduced, it causes an increased flow of tears; this effect lasts one or two minutes, and then disappears completely. At this time, complete *anæsthesia* has been established.

It does not appear from Dr. Lewin's pamphlet that the drug had been used upon man as a substitute for cocaine. But it is evident that, in the absence of the latter, and when kawa is available, it might be tried.

Practical Use of Chlorophyll.

A NEW and rather curious use for chlorophyll seems to be indicated by some researches of M. Godin, as recorded in *Comptes Rendus* last month, which are worthy of the particular attention of pharmacists and others. The author states that a small proportion of the coloring principle named possesses the property of preventing vegetable oils, including those of the "siccative" class, from absorbing oxygen as long as light is excluded. Even the "varnish oils," such as linseed, remain "fat" and do not "skin over" if from $\frac{1}{4}$ to $\frac{1}{2}$ per cent of chlorophyll be added and the mixture is kept in the dark. The admission of the solar rays, however, causes oxygen to be absorbed with greater rapidity than without the chlorophyll.—*Brit. and Col. Drugg.*

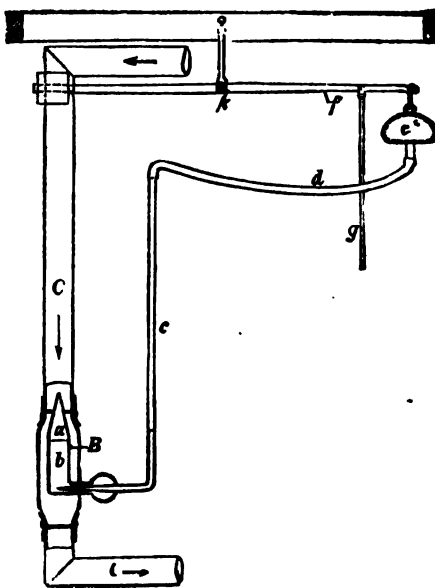
Estimation of Uric Acid.

WHEN it is desired to separate uric acid in as pure a condition as possible, the following process of E. Ludwig may be employed: 100 C.c. of the urine are treated with magnesia mixture and an ammoniacal solution of silver nitrate; in this way, a precipitate of magnesium silver urate and magnesium ammonium phosphate is obtained. The precipitate is digested with a solution of potassium sulphide, and filtered. The filtrate contains potassium urate, from which, after concentration, the uric acid is precipitated by hydrochloric acid. The uric acid is collected on a filter of glass-wool, freed from sulphur by washing with carbon bisulphide, dried and weighed. If the urine contains albumin, this must be first removed by boiling with solution of salt and acetic acid, and treating the filtrate as above. The author finds the precipitation of uric acid by hydrochloric acid is not complete, even after several days.—*Chem. Centr. and Journ. Chem. Soc.*

APPARATUS FOR THE PRODUCTION OF CONSTANT TEMPERATURES.

THE accompanying illustration explains the theory of a contrivance for producing constant temperatures patented by R. Kossmann, of Heidelberg.

Supposing the tube *C* to represent a portion of the apparatus in which a liquid circulates which is to be maintained at a constant temperature. Also, that a lever or balance-beam *f* is suspended at its centre *k*, in a convenient place, attached to or close to the apparatus. Further, that one end of the lever bears a counterpoise weight and the other a hollow cup *e*, connected by the tube *d c* with a small, conical, closed reservoir *B*, which contains, at *a*, a small quantity of a low boiling substance, such as ether, while the space *b*, the tube *d c*, and a portion of the vessel *e* are filled with mercury, so that, when the apparatus is cold, the lever may be exactly balanced. If now heat be applied to the reservoir, the contents of which circulate through *C*, the low-boiling liquid (ether, etc.) contained in *a* will expand, or be partly converted into vapor, and thereby force more of the mercury into the tube



Kossmann's constant temperature apparatus.

and up into the vessel *e*, causing the latter to sink. The balance-beam carries a rod *g*, which is connected with the supply of gas, and which by its downward motion diminishes (in any manner most convenient) the latter. When the temperature of the liquid falls again slightly, a portion of the mercury will flow back towards *b*, and the vessel *e* will rise again, thereby restoring the supply of gas. (Germ. Pat. 33,931, May 19th, 1885.)

Agaricin.

THE demand was recently made by a writer in the *Pharm. Zeitung* that *agaricin* should be assigned a place in the poison closet on account of its potent character. Mr. Jahns, of Göttingen, subsequently pointed out the uselessness of this demand, since the *agaricin* at present sold under this name in the market is nothing else but pure *agaric acid*, and perfectly harmless, as much as 2 grammes having failed to produce any bad symptoms in a cat. It is true that, as a remedy against excessive perspiration, it is given in very small doses (0.005 to 0.010 Gm., or $\frac{1}{10}$ to $\frac{1}{2}$ grain). But it simply acts remedially in this dose, and exerts no dangerous action on the system in a larger dose. Formerly there were other bodies in the market under the name *agaricin*. The white amorphous substance now sold under this name is free from the red resin, which is a drastic purgative.

Efficiency of Commercial Pepsins and Papain.

DR. W. MURRELL reports in *The Lancet* the result of an examination of the digestive power of 13 specimens of commercial pepsin of English, French, German, and American manufacture, only 4 came up to the standard of the *Ph. Brit.* He says that the name is no guarantee of purity, for the production of one well-known firm gave results that may be represented by the figures 871, whilst another, sold under a name equally well-known, was awarded only 162. The same pepsin is often sold under different names, according to the amount of impurity added.

In addition to the above, six liquid preparations, such as wines, essences, etc., were examined, with the result that, while none of them were absolutely inactive, none were very reliable.

To obtain good results in the treatment of dyspepsia, Dr. Murrell advises that two things are essential: first test your pepsin, and then give a plenty of it.

Six specimens of papain (same as papayotin) were examined; two only stood the pharmacopœia tests of pepsin, and the best was about half as active as the best pepsins when used in a similar manner.

Test for Pepsin.

THE official test for pepsin adopted for the British Pharmacopœia, on the recommendation of Mr. F. Baden Binger, is as follows (according to the *Year-Book of Pharmacy*, 1881, p. 417, *et seq.*): Hard-boiled white of egg is to be passed through brass or copper wire gauze with 36 meshes to the inch. A solution of 1% of strong hydrochloric acid (equal to 0.3% of HCl) is to be provided. 100 grains of the finely-divided egg-albumen are to be placed in a small glass or porcelain mortar and lightly rubbed with the pestle during the addition of 1 ounce of the acidulated water, to separate adherent particles. The mixture is then to be put into a test-tube 6x1 inches, a light stirrer of glass rod 7x1-16 inch inserted, and the tube placed in a water-bath. When six specimens are to be examined a beaker 7x4 inches half filled with water will hold them and also permit another tube, containing an ounce of plain water and a thermometer, to be inserted in their midst.

The water-bath and its contents having been heated to 130° F., two grains of the pepsin are to be added to each tube containing albumen and stirred. Stirring should be repeated every five minutes and the temperature of 130° maintained. Nearly all the albumen should have been dissolved in twenty minutes, and solution should be completed within thirty minutes. If the tubes are graduated from the bottom, the residue of undissolved pepsin can readily be noted. Or the undissolved albumen can be strained out and weighed.

"Tsuchiakabi."

TSUCHIAKABI is the name of a Japanese drug, to which attention is attracted in the *Lancet*. It is the dried fruit of an orchid indigenous to Japan. It yields its properties to water, to which it communicates an acid and bitter taste. The medicinal properties are considered to be due to a resin acid and glucoside. The Japanese employ a watery extract of the fruit for diseases of the urinary passages and bladder in cases in which cubebs and copaiba would be prescribed in this country. Over these medicaments it has the advantage of being free from disagreeable odor.

Coca.*

(Continued from p. 82.)

HISTORICAL NOTES.

THE coca plant, raised by mythology to the dignity of a gift of heaven, has played an important rôle both in the public and in the religious life of the ancient Peruvians.

It is related by Garcilasso de la Vega, that the children of the sun, Mama Oello and Manco Capac, appeared to the Indians at the shores of the Lake Titicaca. Both were of resplendent beauty. While Mama Oello instructed the women in domestic duties, Manco Capac imparted to the men the art of agriculture and the most necessary mechanical arts. The Indians, who had hitherto led a nomadic life, were thus united as a nation, and in this manner was laid the foundation of the empire of the Incas and of the city of Cuzco. In order to compensate his descendants to some extent for the hardships which they had been compelled to undergo, Manco Capac bestowed upon them the coca which "sates the hungry, invigorates the tired and exhausted, and renders the unhappy oblivious of his sorrow."

[As pointed out by Dr. Nevinny, there is a curious resemblance between the above and the well-known passage in the fourth book of the Odyssey where it is related of the daughter of Kronion that she "threw into the wine, of which they drank, a remedy allaying grief, soothing, and causing obliviousness of all sorrows."]

Thus is the tradition. It appears, however, that even previous to their coalescing into what might be called a nation or state, the native Indians already were acquainted with coca, and that the Incas had a special object in view, when they declared it to be a gift of the gods, namely to justify the monopoly claimed for it by themselves and the priestly caste. Thus it is easily understood why the royal family alone acquired the right to cultivate coca and to indulge in its use. As a token of his heavenly origin and his sole right of using coca, the king, when appearing in public, wore a *chuspa* (small leathern pouch filled with the leaves) of yellow color, as an official portion of his royal vestments.

And it is probably for the purpose of increasing still higher the heavenly nimbus floating about the royal family, that the wife of Mayta Capac (the fourth Inca) assumed the name of Mama Cuca.

It was regarded as a high distinction, and as a sign of especial favor, when the king presented foreign princes or the Curacas (nobles) of his empire with coca.

The priests who supported the pretensions of the royal family likewise drew the plant as one of the holy or sacred things within the sphere of their domain, and employed it in various ceremonies. While performing ordinary sacrifices, they constantly chewed coca leaves, but on solemn occasions they placed wreaths of coca on their heads. Objects intended for the sacrifice were likewise covered or decorated with coca, or the latter used as a sort of incense, and even offered as a sacrifice itself.

The idols dating from this period appear as having one of their cheeks distended by a "chew" of coca as a sign of divinity.

Gradually, the use of coca extended from the priestly class to the people,

and finally became such an indispensable necessity that absolutely nothing was undertaken in private life without coca. While this custom still prevails in our days, the religious veneration has changed to superstition among the Indians, who use it in all imaginable conditions of life, and ascribe to it the most absurd powers.

The immense consumption of coca compelled the Incas, who firmly retained its monopoly, to seek new localities for its cultivation. Hence there arose, upon the eastern slope of the Andes, in the warm wooded tract extending towards Apurimac, so-called *antis* or *montañas de los antis*, that is, colonies in which the plant was largely cultivated. The planters were compelled to deliver the harvest to the *mitimoes*, or official collectors, appointed by the king, for delivery to the latter or to the priests.

When Pizarro penetrated into Peru, in 1532, he found coca to be not only in universal use, but also to be much abused as an article of consumption. In the beginning, the conquerors paid no attention to the custom of chewing the leaf, since they had been familiar with the general habit of other Indian tribes to have something or other in their mouths. As soon, however, as they learned of the religious veneration bestowed on the plant, they at once began to condemn its use, declaring its benefits to be doubtful, and indulgence in it sinful. Yet it did not require a long time to show that the natives were incapable of performing any protracted labor, particularly in the mines, without coca. And as the Spaniards mainly cared for gold, their views regarding coca experienced a sudden change. The existing coca plantations (*cocales*) were annexed, new ones were started, and the poor people were gradually subjected to the most shameful treatment, merely with the object of filling the pockets of the invaders. The proprietors of the plantations and of the mines mutually worked for each other's benefit. While the former, who were unacquainted with the mode of cultivating coca, compelled the natives by force to work upon their plantations, the owners or managers of the mines paid off their laborers, not in money or subsistence, but in—coca. Consequently, the consumption of coca was enormous, and the revenues of the planters in proportion. It is said, for instance, that the coca plantations of Guamanga yielded a yearly income of between \$20,000 and \$40,000. This period, however, was not of long duration. Having witnessed the great mortality among the natives, caused by their exposure to an unsuitable climate, excessive labor and want of proper food, the Government issued strict orders (in 1560, '63, '67, and '69) forbidding the forced labor in the plantations, and the supply of coca to the laborers, because—so the edict says—the plant is nothing but a sort of witchcraft and devilry, appearing to give strength by the aid of Satan, and not possessing any virtue whatever, etc.

The second Council of Lima likewise attempted to discourage the use of coca from a religious standpoint.

All these measures, however, were of no avail, the profit being so great that the Government finally began to monopolize the cultivation of the coca. But, owing to the law against the employment of forced labor, and owing to increased wages and a diminished consumption, the cultivation gradually diminished from about the year 1618; and in consequence thereof, gave up the undertaking, and left it to private enterprise.

The numerous revolutions and constant wars, without which Peru and Bolivia do not seem to be able to exist, have been a serious obstacle to the development of the industry; though in both countries the cultivation of coca

is quite considerable, and is subject to a tax, forming one of the revenues of Government. According to Wedell, this tax yielded to Bolivia, in 1850, about three million dollars. Scherzer also states that the Bolivian Government usually leases the coca grant to the highest bidder, the usual price offered being about 6 reales per cesto. According to the same author, the tax in the provinces of La Paz and Yungas yielded about \$260,000, and in the province of Cochabamba \$60,000. At the present time, the industry is reported to be again improving both in Peru and Bolivia. [We have no doubt the extraordinary demand for coca all over the civilized world, which has arisen since the beginning of 1885, will very largely increase the area of its cultivation.]

GEOGRAPHICAL DISTRIBUTION.

The true home of coca, as well as the wild-growing mother-plant, has not yet been made out with certainty. De Candolle assumes that it is a native of the western parts of South America, chiefly in Eastern Peru and Bolivia. Poeppig believes that the cultivated coca is derived from *Erythroxylon Mamacucu* Mart., and Kunth refers it to *E. hondense* H. B. K.

In 1750, Jussieu found the coca in the plantations of Yungas upon the Cordilleras of Coroico (see below). The specimens sent to Europe were described by Lamarck and Cavanillas. Unanue, Tschudi, Martius, Wedell, de Castellan, Stevenson and others, likewise met only with the cultivated plant.

According to Antonio de Ulloa, coca was reported to grow wild in the high plateaus of Peru. Matthew has likewise reported having collected some wild-growing specimens in the valley of Chinchao in Peru, which lies outside of the region of the cultivated plant. Matthew's specimens were described by Hooker ("Companion to the Bot. Mag.," II., 25). D'Orbigny found the slopes of the valley Rio de Burgas (in the Valle Grande upon the Cerro largo of Bolivia) completely covered with coca shrubs, and believed they had been brought there (in seed) by birds. Wild coca was also found in the forests of the Argentine province of Salta, by M. Villafane. De Candolle received some herbarium specimens collected by André in the valley of Cauca in Colombia, where André reported them to be very common, while Triana denies this.

The region of cultivation follows exactly the trend of the Cordilleras. Beginning south-easterly at 17° or 18° South Lat., it proceeds towards northwest, reaches its centre in Bolivia and principally in Peru, and ends in the valley of Upar between 10° and 11° North Lat., and 73°-74° West of Greenwich.

[The author now enumerates the several districts and localities where Coca is known to be cultivated. We omit these here, but refer the reader to some passages appended below, from the paper of another writer, who has recently visited the plantations of the province of Yungas.]

Attempts to cultivate Coca outside of South America have not been numerous heretofore. It has been grown in Jamaica, W. I., and with apparent success, according to the report of Hooker and Morries. Some specimens have also been sent from Kew to Martinique and Trinidad. It has also been introduced upon Ceylon (see below). In 1854, Dr. Hasskarl brought coca seeds to Java, but was compelled, by an express order of the Medical Director of the Government of the Dutch East Indies, to refrain from planting them, as that officer regarded them "dangerous for the colony." In British India, the plant appears to be likewise in a fair way of becoming naturalized. It has also been reported as

*Abstract of a pamphlet entitled: "Das Cocablatt. Eine pharmakognostische Abhandlung von Dr. Josef Nevinny, Assistent an der Lehrkanzel für Pharmakologie und Pharmakognosie an der K. K. Universität in Wien." 8vo. Wien, 1886. (With the sanction of the author.)

NOTE.—The author has had at his command almost all the existing literature on coca. He does not seem, however, to have seen the account given by Clements R. Markham in: *Peruvian Bark*, 8vo, London, 1880, p. 140, etc. (reprinted in *New Rem.*, 1881, 145).

being cultivated in Zanzibar, Africa. And finally, it is reported from Australia that the experiments made with coca cultivation at Brisbane had turned out very favorable.

NOTE OF ED. AM. DR.—We append here some passages of an interesting paper on Coca by Dr. Henry H. Rusby, in the *Therap. Gazette* (Jan. 1885). This writer has visited the coca plantations, with a view of studying the whole subject on the spot. Regarding the localities where the best coca is grown, he says:

"For the details concerning cultivation here presented I am chiefly indebted to Mr. Oscar Lohse, one of the most intelligent cultivators in this country, and proprietor of the Finca of San Antonio, two leagues from the tower of Caroca, Yungas.

"The district of Caroca may be fitly considered as representing the remainder of Yungas, and Yungas as representing the principal coca districts of Bolivia. The conditions of soil and climate may be briefly stated. Proceeding eastward from La Paz—itself somewhat more than ten thousand feet* above the sea—for a distance of four or five leagues, we reach the summit of the pass over the easternmost cordillera of the Andes, this cordillera having an average elevation in this immediate district of perhaps sixteen thousand feet. This ridge, always more or less snow-covered, cuts off a large portion of the westward-bound clouds, which are thus either precipitated in the form of rain before reaching the summit, or, arriving there, are deposited in the form of snow, and then returned by means of rivulets to the valleys, chiefly of the eastern slope. It should be noted that in Northern Peru and Ecuador this cordillera is higher than here, so that the eastern slope in those regions is more profusely and regularly watered than here. From this pass, had we a direct road, we could travel in half a day, so steep is the descent, to the banks of the Caroca River, having an altitude of only two thousand four hundred feet. When we have descended to six thousand four hundred feet we should meet with our first coca plantations, and after passing the two thousand foot level we should have left them principally or entirely behind. Within this four or five thousand feet, then, lie the cocales of Bolivia. No description can convey a perfect idea of the steepness of this luxuriant slope. Travel, entirely by riding-animals, is extremely difficult. There are only occasional places where we can readily leave the road, and here plantations are established. The hedge of coffee-plants at the roadside proves on examination to be the uppermost row of a plantation; and as we peer down among the shrubs, we marvel that any one can preserve his footing while cultivating or collecting the coffee. The scenery is of course magnificent, and of a different type, I should think, from that of any other part of the world. The mountains are too young to have lost, to a great extent, their ragged outline, yet softness is imparted by the richness of the vegetation. We stand among the coca-plants, and distinctly see another coccal nearly four thousand feet below us."

Concerning the cultivation of coca outside of its native home, the author appears to have less information at his command than Dr. Nevinny. He says:

"As regards the exportation of the culture of coca, the experiment has been tried, I believe, but once. Several years since, Mr. F. L. Steinart, of La Paz, shipped a small quantity of seeds via London to Ceylon, and during the past season the first products

were shipped to London and sold at a high price. Seeds for export should be exposed for several days to a hot sun, so as to rapidly dry the fleshy exterior which thus forms a protection to the germ within.

"It is my opinion that the coca plant is adapted for culture in many countries where it is now unknown. Among the countries where it would be well to experiment with it are Guatemala, Mexico, the East and West Indies, India, Southern China, portions of Africa, and possibly of Italy. It is doubtful if it would grow in any portion of the United States. Requiring an average temperature of at least 70°, the only districts at all suited would be Florida and Southern Texas; and it is highly probable that proximity to the sea coast at so low an altitude would prove fatal. Nor would irrigation prove adequate in these countries possessing a long dry season. The plants must not only have an abundant supply of water at the roots, they must be bathed in a humid atmosphere for the greater portion of the year; but from what I have read of some of the countries above named, I am confident that the plant would there find a congenial home. Jamaica offers especially hopeful conditions."

Borax as a Remedy for Epilepsy.

THIS is the subject of a paper by Charles F. Folsom, M.D., of Boston, in the *Boston Med. and Surg. Journal*. He publishes some of the details of two cases, and says the only annoyance from the use of borax in doses of ten to fifteen (or more) grains three times a day is a dry, scaly eruption, giving rise to a great deal of itching, but which disappeared after several weeks' use of arsenic internally and oxide of zinc ointment with vaseline externally. Aromatic tinctures given with it prevent nausea, which immediately follows its administration in cold water. The first few doses of borax may cause diarrhoea, which soon ceases. He has seen a number of cases of marked improvement from the use of borax after the bromides had failed to do much good, and, also, many where the alternate use of the two drugs, each for several months, was attended with excellent results. It is best taken an hour and a half after meals.

Conessa Bark and Conessine.

SIX or seven years ago, German missionaries located in tropical Africa sent home specimens of the bark of a tree which they had used successfully in dysentery. Wiggers recognized it as *Cortex Conessi*, or *Cortex antidysentericus* [which was formerly supposed to be derived from *Echites pubescens* Buchan., but has now been recognized by Wulfsberg as coming from *Holarrhena Africana* D.C.]

This bark was examined by A. Faust and A. Abich, who found an alkaloid in it, which was not, however, obtained in a pure state. K. Polstorff and P. Schirmer, having obtained larger quantities of the bark, have now prepared a larger amount of the alkaloid in a pure state. According to these authors, the alkaloid obtained by them is identical with the *conessine* formerly (1858) extracted by Haines from the East Indian conessa bark, and probably also with *wrightine*, obtained (1864) by Stenhouse from *Wrightia antidysenterica*. They propose to retain the name *conessine*.

The bark contains only about one-tenth per cent of the alkaloid. It is remarkable through the fact that it contains no oxygen, the only other alkaloid known to be free from oxygen being *aribine*. (Curarine would belong here also, but its composition is not quite certain.) Its formula is $C_{10}H_{10}N$. —From *Ber. d. Deutsch. Chem. Ges.*, 1886, 78.

Thalline.

DR. JANSEN has employed sulphate of thalline in the military hospital at Helder, using alcohol and water as a vehicle. This solution has an aromatic flavor and odor, and is perfectly harmless when taken internally. It had a marked antibacteric action, and was used in doses of 1 gramme. In 17 cases of malarial fever, it was of less use in 16 than quinine, serving only to shorten attacks, the disease returning when its use was suspended. Dr. Jansen does not consider the occasions for its use to be numerous.

As an antipyretic, he recommends it only in cases where the temperature is so high as to endanger life; and even then he considers cold baths to be better. If, however, cold baths are contra-indicated, thalline may be of great service, owing to its quick action and the absence of unfavorable effects upon the kidneys or otherwise. It is to be preferred to kairin, which may cause numerous complications and unpleasant results, and which causes but an extremely short period of apyrexia. It is preferable to antipyrin on account of its smaller dose and the fact that the latter, when used by injection, is apt to cause vomiting. Antipyrin is, however, superior to it on account of the longer period of apyrexia which it induces. Dr. Jansen found that a very small dose of thalline would control the high temperature of phthisis. —*Br. Med. Jour.*, from *Weekbl. von het. Ned. Tig. voor Geneesk.*

The Analysis of Commercial Iodine.

G. WEISS received some samples which by appearance might contain 99 to 99.5 per cent of actual iodine, but which on titration showed more than 100 per cent. They were found to be contaminated with bromine to the extent of 3 per cent. For the separation and determination of iodine, bromine, and chlorine, Weiss heats the substance in a current of air with an excess of a moderately strong solution of ferric sulphate, receives the iodine in a strong solution of potassium iodide, and titrates it with sodium hyposulphite. The residue is cooled, mixed with potassium permanganate, heated to 50° to 60°, and treated with a current of air. The bromine evolved is received in ammonia and determined by titration or, preferably, gravimetrically as silver bromide. The chlorine is then calculated from the difference. —*Rep. Anal. Chem. and Chem. News.*

Adulteration of Cubebs.

DR. MENIER lately reported to the Medical Society of Nantes that, in examining the purity of drugs dispensed in that city, he had occasion to believe that *Piper Crassipes* was extensively used as an adulterant for cubebs. [This only goes to confirm for France, what is now well known to be a common occurrence in England and in the U. S.—ED. AM. DR.]

The false cubeb-berries have a more grayish appearance, their flavor is different from the real cubebs, and their odor was strong and camphor-like. Treated with a few drops of concentrated sulphuric acid, real cubebs give a carmine color. This test, when applied to spurious cubebs, gave a yellowish-brown color, which is said to be characteristic of *P. crassipes*. Dr. Marais verified the above results, and expresses a doubt whether pure cubebs are to be found in France. —*Gaz. Med. de Nantes.*

Milk-Peptide, manufactured by Mr. Weyl, of Berlin, is described as a colorless powder, soluble in water, and not unpleasant to the taste. Senator commends it for use in phthisis and convalescence from typhoid.

* The altitudes and measurements are given approximately in English feet. By the Spanish measurements the altitudes are much greater.

Borate of Manganese.

THE residue left after the preparation of chlorine gas from hydrochloric acid and water, which contains manganese chloride ($MnCl_2$) may be utilized in the following manner, according to E. Dietrich in the *Pharm. Centralhalle*.

Dilute the residue with 10 parts of water, then add a dilute solution of carbonate of sodium, under stirring, until a small quantity of a pale reddish precipitate is produced. This precipitate will redissolve on further stirring, while ferric oxide and alumina will separate in place of it, in brown flakes. If the first formed precipitate has redissolved, and the liquid has not become light colored, more soda solution must be added.

The separation of iron and alumina may be judged to be complete when a little of the manganese carbonate remains undissolved. [Carbonate of manganese is dissolved by solutions of ferric salts, with elimination of its carbonic acid, and precipitation of the iron as ferric hydrate.]

Now filter the solution and add a dilute solution of borax as long as a precipitate is produced. Collect this, without washing, on a strainer and dry it.

This borate of manganese, when pure and unadulterated [for which purpose oxide of zinc is often used] is in large demand by manufacturers of varnishes and patent dryers.

Hypnone.

THE *Lancet* of March 6th contains the following additional information respecting this new remedy: Drs. Dujardin-Beaumetz and Bardet are the discoverers of its hypnotic properties and the originators of the name "hypnone." Its scientific titles are several, but acetophenone is the one most commonly used. It is a product of the distillation of a mixture of benzoate and acetate of lime, and at ordinary temperatures is a clear, colorless liquid; but a moderate degree of cold converts it into a crystalline mass. It has not yet been manufactured to an extent which permits it to be found abundantly in the market. It has a characteristic odor, which is very persistent, and few patients would take it unless it were inclosed in capsules. Its effects are not quite equal to those of urethan, but in cases of simple insomnia, unattended with pain, it acts promptly and is followed by no after-effects. [On Hypnone, see our last number, p. 77.]

Tumbeki, used in Persia as a tobacco and smoked in a water-pipe, is reported by Mr. E. M. Holmes, Curator of the Museum of the Pharmaceutical Society of Great Britain, to be derived from *Nicotiana persica*. It is alleged to be in high repute in Persia on account of its narcotic action, and it is thought to contain more nicotine than *N. Tabacum*.

[Tombeki or tumbeki has been supposed by several previous writers to be a species of *Lobelia*. For instance, by Adolph Steege, of Bucarest, in an article on Hashish, in *Buchner's Report*. (Nürnberg), Vol. 87 (1845), p. 228. But it is simply a species of tobacco, and is often smoked in conjunction with remedial agents, as a means of medication. It is more correctly spelled *tāmbagā* (pronounced *tāmbagā*), and is not unlikely identical, etymologically, with tobacco. It is usually smoked in the nargileh or water-pipe (nār-gīleh means originally "cocoa-nut," and then, because such a nut was originally used to hold the water, it became a designation for the water-pipe. Another name for this pipe is *ghilyān*). ED. AM. DRUGG.]

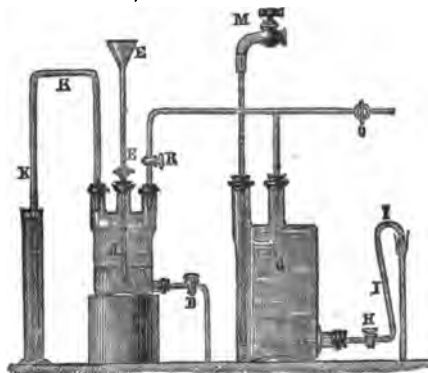
Milk as a Vehicle for Iodide of Potassium.

DR. E. L. KEYES, in *The New York Medical Journal*, speaks highly of milk as a vehicle for the administration of iodide of potassium. He says that in cases where a large quantity of the drug has to be given, he has found that the stomach does not rebel when milk is used as the vehicle. Ten grains or more of the iodide in a gill of milk make a palatable drink, and impart only a mild metallic taste to the fluid, which most patients find not at all disagreeable.

APPARATUS FOR THE CONTINUOUS PREPARATION OF OXYGEN GAS.

A. BIDET uses the apparatus here described for the continuous preparation of oxygen gas from chloride of lime and oxide of cobalt.

The oxide of cobalt is put into the vessel A, and a solution of chloride of lime is added to it through the funnel E. The liberated oxygen escapes through the tube (containing stop-cock R), and while the stop-cock O is open, passes along the horizontal tube to wherever the gas may be conducted. When O is shut off and the stop-cock at M is opened, the generated gas will pass into the vessel G, and drive a corresponding volume of the water out through M. By closing M and opening O, the current of the gas through the horizontal conduit pipe may at any time be restored. When the



Bidet's apparatus for preparing oxygen.

charge in the flask A is exhausted, the stop-cock R is shut off and the contents allowed to run out through D, after which it is only necessary to add a fresh quantity of solution of chloride of lime to the oxide of cobalt contained in the flask. The tube K dips into a cylinder full of water of such height that the level of water in the narrow cylinder is higher than that in the flask. K, therefore, acts as a safety-tube when the pressure in A becomes too high.—*Chem. Zeit.*, 1886, No. 6.

[Note by ED. AM. DR.—As described by the author, the above process takes place without heating. The oxide of cobalt meant is no doubt the cobaltic oxide or sesquioxide of cobalt, Cr_2O_3 . Heretofore it has been known that a solution of chloride of lime gives up oxygen when a few drops of solution of chloride of cobalt are added to it and the mixture heated to about $176^\circ F.$, when oxide of cobalt is precipitated and oxygen escapes abundantly. The oxide of cobalt acts, no doubt, as a carrier of the oxygen, taking it from the chloride of lime and releasing it immediately again.]

Chloropeptonate of Iron is said to be a combination of a peptone and perchloride of iron which undergoes no change by gastric juice or the alkalies of the blood. It is absorbed and assimilated just as it is taken, and causes higher temperature, loss of flesh, more copious excretion, improved appetite and improvement in the character of the blood.

Uses for Parchment Paper.

DR. T. M. STRONG reports the following uses for parchment paper:

(1) To take the place of oil-silk—since it holds heat and moisture better than the silk, is much more agreeable to the patients, and is quite inexpensive.

(2) In place of oakum, etc., as a vehicle for applying poultices. The paper will stand washing, the same piece having been used as many as four times.

(3) As an impervious dressing or roller bandage, applying it wet, either in water or in an antiseptic solution. It dries quickly, and in doing so adapts itself to all unevenness of surface.

(4) In place of rubber blankets. This is especially serviceable. It keeps freer from foul odors a longer time than the rubber, and can be freely washed. Those who have used the rubber blanket know, even with the best of care, how soon the rubber begins to peel off, thus leaving a spot difficult to keep clean, and soon the blanket is useless. The cost of the parchment blanket is only a few cents, and must be laid on a smooth surface.

Diseased Eggs.

DR. D. F. WRIGHT, in the *Bulletin of the Tennessee State Board of Health*, says that soon after it became the practice to transport eggs in large quantities and to long distances by railway trains, it was found on their arrival that adhesion had taken place between the membranes of the yolk and those of the shell, so that the yolk could not be turned out of the shell unbroken. On examination by experienced pathologists this was found to be the result of true inflammation; the material of the adhesion was found to be precisely the same as that of the plastic exudation in inflammation of the lungs or bowels. It will at first seem absurd to speak of inflammation in such an unformed mass as an egg; but this arises from our forgetting that, structureless and unorganized as it seems, the egg, even when fresh laid, is a living being, and capable of disease from external causes. The cause of this inflammation is undoubtedly the shaking and friction from the motion of the cars, and it cannot but render the egg more or less unhealthy, as the products of inflammation can never be as salutary in food as those of healthy growth.

Long Tubes in Nursing Bottles.

A CORRESPONDENT of the *Therapeutic Gazette*, writing from Berlin, says: "In the Children's Department of the University Hospital of Berlin, there is a collection of some 300 nursing-bottles of various sizes and shapes, all provided with a long rubber-tube, which incloses a piece of litmus paper colored red. No commentary is needed. It is quite clear that the presence of lactic acid in the tube suffices to explain many obscure disorders of the alimentary tract, for which physicians are often at a loss to find satisfactory explanation."

Gangrene following the use of Iodine Collodion.

THE application of iodine collodion to a frost-bitten finger last year, in Vienna, led to the loss of the finger, and suicide of the physician from chagrin on account of the unfortunate notoriety given to the case. Dr. Vogelsang, of Biel, now reports a case in which iodine collodion painted over a large surface was followed by gangrene and sloughing of the skin. In another case its application over a gland, following an application of tincture of iodine, resulted in a bad ulcer.—*Med. Chir. Rundschau*.

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EDITORIAL.

WE have given all the essential information regarding lanolin in our March number, page 43. It has been very highly recommended as a base for ointments by Prof. Liebreich and others, and is already in considerable use all over Europe and in this country.

Like all new products, however, it is likely to be abused, and it will require some time to ascertain its proper sphere of utility. Being so rapidly absorbed by the skin, the manufacturers recommend that it be mixed with a small proportion of lard or cerate, to retard its absorption. A circular has recently been issued in which are given a large number of working formulæ for various ointments made with vaseline. We notice among them several that, on theoretical grounds, appear to be very inappropriately made with lanolin. Every drug that is presented to the skin in an ointment is not intended to be absorbed. Indeed, some would be perfectly useless if absorbed, and others would be highly injurious. Take, for instance, the Pulvis Arsenicalis Cosmi. This is intended purely as a local caustic, and the less tendency there is given to the accompanying ointment to sink into the skin the better it would seem to be. It must not be forgotten that lanolin differs from other ointment bases in this, that it contains a large percentage of water. This water is certainly capable of dissolving some of the arsenious acid, and when absorption takes place it is natural to expect serious results. It is true, we have no proof as yet,

through actual experiments, that our surmise is correct, but we are certainly justified in warning against the incautious use of this substance. Similar objections will probably be found justified in such lanolin ointments as are made with red oxide of mercury, nitrate of silver, pyrogallol acid, white precipitate, naphthol, etc., etc., the effects of all of which are desired to be purely local and superficial.

On the other hand, when the constitutional effects of a drug are required, as, for instance, in the case of metallic mercury, lanolin appears to be very much in its place.

It is probably not so much as a base for ointments containing active medicinal substances, but as a bland application *per se*, that lanolin will be found beneficial. However, only time and further experience can settle this question. Meanwhile, it is advisable to be cautious in combining with it active substances, particularly such as are soluble in water.

ONE of our friends has handed us the following prescription, which had recently been presented at his counter:

R Chloroformi.....fl. 3 iss.
Olei Tiglii.....gtt. i.
Glycerini.....fl. § i.
S. To be taken at one dose.

He inquired of the patient how it was to be administered, and ascertained, incidentally, that it was to be used as a remedy for tape-worm. The employment of chloroform for this purpose had not before come to his knowledge, and as he did not know the prescriber, and was unable to ascertain anything regarding his professional standing, and, moreover, failed to find his name in the medical directory, he made inquiries among his friends, but did not succeed in obtaining the desired information. As he was unwilling to be made to share any responsibility with a person unknown to him, he finally declined to put up the prescription himself, giving a plausible excuse to the person presenting it, and referring him to the pharmacist whose name was printed on the physician's prescription.

We are now asked to state: 1, whether the dose of chloroform directed in the above prescription is proper and safe; 2, whether the dispenser was justified in declining to put up the prescription.

Regarding the first point, we would say that the older authorities all agree in naming comparatively small doses of chloroform as proper to be administered by the stomach, and none of these make mention of its effect in tape-worm. It is probable that a pharmacist will consult, on questions of therapeutics and doses, one of the dispensatories, before any other work. The *U. S. Dispensatory* (latest edition) speaks of the effect of a dose of 15 to 25 drops (that is, 4 to 6 minims, or 0.24 to 0.38 C.c.) as "inducing only gastric symptoms, chiefly due to its irritant properties, etc." It also says that "taken in doses of 1 to 2 fluidrachms, it produces a narcotism similar to that seen when it is ad-

ministered by inhalation, the narcotism, however, developing and passing off much more slowly than in the latter case. This is all the *U. S. Dispensatory* says about the size of doses of chloroform taken by the mouth, and a careful pharmacist will probably not risk dispensing a larger dose without further inquiry, on the order of a prescriber unknown to him. The *National Dispensatory* gives no dose whatever for the internal use of chloroform. It mentions its use by inhalation and hypodermic injection, and only speaks of dangerous doses, viz.: "A large number of cases of poisoning by chloroform taken into the stomach have been recorded. In one case of recovery, a weakly man had swallowed three ounces of it. Doses of half an ounce or more produce general convulsions, insensibility, dilated pupils (etc., etc.)." This authority, therefore, would not encourage the pharmacist either, to dispense a large dose of chloroform under the circumstances above mentioned. The *Companion to the U. S. Ph.* (by Oldberg & Wall) gives the internal dose at 2 to 30 minims. The new British Pharmacopœia gives the dose at 3 to 10 minims. The German Pharmacopœia does not include it in its table of maximum doses. Hager says, in *Pharm. Praxis*, I., 865 (transl.): "The cautious pharmacist will regard 2 Gm. (30 grs. or about 23 minims) as a very high dose, which may only be exceeded when the physician adds the sign: !"

These and other authorities that might be quoted evidently justify the pharmacist who is not in possession of the recent medical literature, in declining to dispense larger doses, unless he knows the prescriber, or has some assurance that he (the dispenser) will be held blameless in case of bad results.

However, the information afforded by the above authorities requires to be supplemented by facts more recently established. That chloroform has been occasionally used as a remedy for tape-worm, as far back as 1869 (see *Ther. Gaz.*, 1886, p. 22), and even earlier, is quite certain. Of late, it has been used to a considerable extent for the same purposes, and most medical journals will be found to have given reports of cases (see the index to last year's volume, in each case). While quite a number of physicians still adhere to it, a great many declare that they shall cease to use it, as they either failed to expel the worm, or noticed disagreeable symptoms from its use. That a dose of 1½ fluidrachms of chloroform, properly diluted with glycerin, will not be dangerous to a healthy adult appears to be almost certain from the recent reports. Yet, in the light of the authorities generally accessible to the pharmacist, it would be a dangerous dose. Alexander Winter-Blyth reports that the *smallest* dose that has proved fatal to an adult was 15 Gm., which he says is nearly 4 drachms ("Poisons: Their Effects and Detection." *Wood's Library*, 8vo, New York, 1885, vol. i., 127). As the author means drachm-weight, he is about correct. But if *measure* were meant,

then 15 Gm. of chloroform will only measure 174 minims, which is *not quite three fluidrachms*.

Regarding the second point, we are decidedly of the opinion, that, under the circumstances, the pharmacist was justified in declining to put up the prescription. As we are informed, he failed to find the physician's name in the medical directory, the only official list at his disposal to ascertain the standing of any regular practitioner. It would be a risky thing for a pharmacist to put up every prescription brought to him and signed by a person unknown to him. Should bad results follow, a coroner's jury would censure him as well as the prescriber, and if the latter could not be found, would censure him the more.

We do not want, however, to be understood as denying the physician the right to prescribe any size doses at his own responsibility. When the prescriber is known to the pharmacist, and proper steps have been taken to hold the dispenser blameless in case of accidents (which may be done in a variety of ways, as for instance, by the prescriber attaching a note stating that he has written for such and such a quantity designedly, or by giving the quantity both in figures and in words, etc., etc.), the physician will never meet with a refusal from the pharmacist.

DR. DE VRIJ recently published a paper (in *Nieuw Tijdschrift voor de Pharm.*, March, 1886), in which he gave the results of examinations of several brands of English sulphate of quinine, from the manufacturers of greatest repute, namely Howards & Sons, Thos. Whiffen. It is very unfortunate that Dr. de Vrij relied exclusively upon the optical test, since it is well understood that this cannot always be relied on, since there may be circumstances when the test will actually appear to indicate the presence of cinchonidine, when there is, in fact, none whatever present. He found Howards' quinine to contain 9.508 per cent of sulphate of cinchonidine, and Whiffen's 6.942 per cent.

In the *Pharm. Journal* of March 20th, Mr. A. J. Cownley criticises de Vrij's method of examination and the results obtained thereby. He gives his own results based upon a method of assay which would detect much less than 1 per cent of sulphate of cinchonidine (Kerner's test).

Mr. Cownley's results show that some of the samples he examined contained no cinchonidine whatever, while the majority contained all the way from traces to 5.10 per cent, there being, of course, some brands of sulphate of quinine on the market [which are made from barks rich in cinchonidine] containing a small percentage of cinchonidine. On the other hand, there are also some very poor lots of commercial sulphate of quinine on the English market, as shown by Mr. Cownley, which contain from 5.92 up to 9 per cent cinchonidine sulphate. One sample even contained 13 per cent. But, according to Mr. Cownley,

these brands are derived from other houses, and not the two renowned firms mentioned above, whose products were examined by Mr. Cownley.

Prof. de Vrij has, since then, published an additional article (*Nieuw Tijdsch. v. d. Pharm.*, 1886, 35), in which he reports the results of his examination of three French quinines: 1, that of Pelletier, Delondre et Levaillant; 2, that of the Pharmacie Centrale; and 3, that of Thomas. By chemical test he found these to contain

1. 0.097 Gm. cinchonidine.
2. 0.225 Gm. "
3. 0.840 Gm. "

But by optical test, upon which he lays the greater weight, he obtained from them:

1. 5.954 Gm. sulphate of cinchonidine.
2. 9.073 Gm. " "
3. 12.448 Gm. " "

which results will certainly elicit an acrimonious remonstrance from the French manufacturers.

MR. E. M. HOLMES recently exhibited (before the Pharm. Society) a specimen of the tree which produces the West Indian "oil of sandal wood." As no species of *Santalum* is known to exist on the American continent, he suspected that the West Indian oil was derived from some other plant, and he was confirmed in this surmise when he received the specimen of the tree, which appears to belong to the family *Rutaceæ*, but which could not be definitely identified, owing to the absence of flower or fruit. It is quite certain, meanwhile, that the West Indian sandal-wood oil is *not* derived from a species of *Santalum*. With respect to the medicinal value of the West Indian oil, which is only about one-third of the value of the genuine East Indian sandal-wood oil, Mr. Holmes was informed that in England and Australia it was rejected by retail druggists, but that it was *sold, to a considerable extent, in the United States*. It would be interesting to ascertain the truth about the production and disposition of the product. The West Indian oil appears on the lists of prominent dealers in essential oils in this country, and is sold for but little more than one-half of the price of the East Indian oil. It is probable that most or all oil of sandal wood used here medicinally in diseases of the urinary passages is the West Indian variety, and that the East Indian is chiefly restricted to perfumery.

W. LASCELLES-SOTT has published (*Brit. and Colon. Drugg.*, March 6th) the results of his preliminary investigation into the nature of hopeine, which has lately made such a stir (see our last number), and he finds that it agrees in all respects with morphine. Certainly, the reactions mentioned by the author, which even extended to physiological tests and to the preparation of the artificial alkaloid apomorphine, seem to leave no room for doubt.

IN our last issue (p. 69), we gave a new test for the purity of cocaine, communicated to us by Mr. Alexander Boehringer, and taken from European journals. As Mr. Boehringer's letter reached us only just before going to press, there was no time to refer to the original source, so as to describe the text more in detail. We have, in the mean while, consulted the original, and have also had occasion to see the test applied upon cocaine in different stages of its manufacture, and upon crystallized and amorphous cocaine, and can now speak of it from our own experience.

Pure crystallized or crystallizable cocaine, when treated with very dilute solution of permanganate of potassium, is thrown down as permanganate in form of a rose-colored precipitate, free from any shade of brown. When the precipitate is treated with distilled water, it redissolves, forming a clear violet or rose-red solution, which keeps bright and without any signs of decomposition for a considerable time (at least one hour; generally two or more hours). If the cocaine was the amorphous variety, or was mixed with the latter or with any other foreign substance, the precipitate produced by permanganate is not rose-colored but a muddy brown, due to the separation of manganic hydrate, and, on dilution with water, this does not, of course, redissolve, but produces a dirty-brown, opaque liquid, which soon becomes almost colorless after the manganic hydrate falls to the bottom. In carrying out the test, proceed as follows:

Weigh out 0.010 Gm. ($\frac{1}{4}$ gr.) of the sample of cocaine hydrochlorate to be examined, put it into a small test-tube, and add three drops of water. Agitate gently until it is dissolved; then add, by means of a pipette, four drops of a clear solution of permanganate of potassium, containing 0.3 per cent of this salt. This will produce a precipitate, varying from a pure, pale rose-color, in the case of the pure cocaine, to a reddish or brownish rose-tint, in the case of the less pure, or to a pure brown color, in the case of the amorphous cocaine. Now add to the contents of the test-tube two C.c. of distilled water and agitate. In the case of pure cocaine hydrochlorate there will result a fine rose-red solution which is entirely free, or nearly so, from minute flocculi or crystalline needles, though these will show themselves after some time, without, however, altering the tint of the solution for at least one hour. In the case of a sample containing only a moderate amount of the amorphous alkaloid, the rose tint will be less handsome, and flocculi will appear in it sooner. In the case of the amorphous salt, or when the latter predominates, there will be no rose-tint at all, but a brown mixture, which will soon separate into a brown precipitate and nearly colorless liquid.

As it is not always easy, when dealing with a cocaine salt containing only a moderate proportion of the amorphous alkaloid, to judge the character of the rose tint as produced by the test, without a chance of comparing it with

a standard, it is always best to make the test upon a sample of crystallized cocaine hydrochlorate of known purity at the same time. By comparing the appearance of the two precipitates, and that of the solutions produced by the addition of water, a sure conclusion may be reached regarding the purity of the sample.

This test was originally proposed by Dr. F. Giesel, in the *Pharm. Zeit.* He recommends to dissolve 1 centigramme of cocaine hydrochlorate in 1 or 2 drops of water, and to add about 1 C.c. of a 0.3 per cent solution of potassium permanganate. This produces a violet precipitate, causes only traces of manganic hydrate to be separated at ordinary temperatures, and on boiling no odor of bitter almonds is developed.

In our experience, the above test is rendered still more delicate by adopting the proportions given by us. The smaller quantity of permanganate added permits the more ready recognition of the true tint of the solution. Moreover, when the test-tubes have stood at rest until the test-liquids have become colorless, the addition of a further drop of the permanganate solution will produce the former reaction in a still more handsome manner. The boiling is not necessary, since any sample which produces the odor of bitter almonds when thus boiled, exhibits its inferiority already by the muddy tint of the color test.

The sulphuric acid test, upon which main reliance has been based heretofore, is very useful, but not always reliable. Pure cocaine and its salts certainly produce a colorless solution with concentrated sulphuric acid, and this solution does not begin to acquire a tint for a long time, if protected from dust, etc. But the amorphous cocaine does not necessarily produce a deep-colored solution with the acid, as has been asserted. We have in our possession samples of the amorphous cocaine which, after being dissolved in strong sulphuric acid, do not show more than a pale yellow color after 18 hours. On the other hand, we have samples of cocaine hydrochlorate containing both the crystalline and amorphous variety, mixed, which gives a decided reddish tinge with the acid after a very short time (less than fifteen minutes).

THE following, known as the "House Bill No. 1,621," has been introduced to the House of Representatives by Hon. Darwin R. James, and is now before Congress.

"Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, that residents of each State and Territory may, within the other States and Territories, and within the District of Columbia, solicit from dealers or merchants orders for goods and merchandise by sample, catalogue, card, price-list, description, or other representation, without payment of any license or mercantile tax."

The bill being before the Committee on Commerce, was argued by representatives of the Traders' and Travelers' Union on the 1st and 2d of April, when petitions were also presented with signatures of nearly 5,000 trading manufacturers and merchants of New York, Philadelphia, Baltimore, New Orleans, Chicago, and Boston, who

employ about 25,000 travelling agents and do a business amounting to something like \$2,500,000,000 yearly.

New Jersey Pharmaceutical Association.

THE 16th annual meeting of the N. J. Phar. Association will be held at the Continental Hotel, Broad St., Newark, N. J., Wednesday and Thursday, May 19th and 20th at 10.30 A.M. each day. A full attendance of members is earnestly requested. The local pharmacists will spare no pains in making the meeting a grand success, pharmaceutically and socially. Ample space for manufacturers and dealers in pharmaceutical preparations and druggists' sundries to exhibit their products.

For particulars address Alex. M. Lennett, Local Secretary, 77 Clinton Ave., Newark, N. J. Yours, etc.,

R. J. SHAW, Cor. Sec'y.

A CORRESPONDENT writing from Alhambra, Decatur Co., Kansas, says that the place offers superior advantages to a druggist, a good business man being likely to find a good trade there at once. A physician is also needed. The writer also remarks that "we control a rich, wide territory with splendid crop prospects."

As no place bearing this name is mentioned in the edition of *Martin's Druggist's Directory* which we possess, we infer that the place is of recent growth.

Charles H. Zeller, assistant to the Professor of Pharmacy in the Philadelphia College of Pharmacy, died suddenly on the 7th of April, at the age of twenty-six years. He was an alumnus of the class of 1880, and held his position since his graduation.

The Pharmacie Centrale.

THERE are in France 8,208 chemists and druggists, of whom about 900 are in Paris. These are united in one body, forming an association known as the *Pharmacie Centrale*. This society does not sell drugs to either the public or physicians, but only to shareholders and chemists and druggists at home or abroad. It does not manufacture special articles which have to be advertised, but only drugs used in current practice. It produces 300,000 kilogrammes of pharmaceutical products, 300,000 kilos of chemicals, and 250,000 of powdered drugs. The factory is at St. Denis, and occupies a considerable area. The machinery is brought to the greatest degree of perfection, and is worked by a 100 horse-power engine; 250 hands are employed. M. Genevoix, the principal director, devotes all his efforts to the establishment, and has held the office for some years. At the Antwerp Congress, a certificate of honor was awarded to the *Pharmacie Centrale*.—*Br. Med. Jour.*

Rubus Chamæmoris. (CLOUD-BERRIES.)

DR. S. A. POPOFF, a Russian physician, has recently experimented with this drug which has for a long time been used by Russian peasants as a diuretic. A paper on the diuretic properties of the berries as used in cases of hydrocephalus, published (in German) by Dr. Trinkovski, in 1856, was the first account of it to be found in medical literature. Dr. Popoff has used it in the form of infusion, decoction, and tincture, and has separated from it an acid which he believes to be the active element. Experiments on animals seem to cause no increase in arterial tension, and but slight disturbance of the heart's action, but the quantity of urine discharged is increased.—*Lancet.*

Disinfection with Corrosive Sublimate.

KOENIG recommends bichloride of mercury as a disinfectant for rooms. The windows, chimney, etc., are carefully closed up, and 50 Gm. of corrosive sublimate are placed in any suitable vessel, which is then set on a pan of burning charcoal, the operator immediately leaving the room and closing the door. After about four hours, he re-enters with a cloth over his mouth and nose and throws open the windows. After some hours of ventilation, a slight fumigation with sulphur is made to follow, which neutralizes any remnants of mercury. This process not merely disinfects, but destroys all kinds of vermin. [The author does not give the exact dimensions of the space for which 50 Gm. of corrosive sublimate should be taken, but merely states that this is the quantity for an ordinary sized room.—ED. AMER. DRUGG.]—*Journ. de Pharm. et Chim. and Chem. News.*

Nostrum Traffic.

THE unrestricted traffic in patent medicines is a disgrace to our civilization; communities and States are up in arms against alcohol as a beverage in all its forms except the one most detestable and villainous. Introduce some vile ingredient into the alcohol, christen and label it as a patent medicine, and lo! it is robed in innocence and welcomed to the homes of the righteous. A poison can be legally sold as such in most States only with a glaring label of warning, and after double or triple forms of registration by a competent pharmacist. Put it up as a patent medicine, decorate it with a seductive title and a rainbow wrapper, and at once it is beyond the restraints of regulation, and may be sold by street-hawkers, slaughter shops, anybody and everybody, without let or hindrance. Where is the consistency, the intelligence, the justice in this strange partiality for the nostrum curse?—*Western Druggist.*

Explosive Mixture.

A FRENCH military apothecary, J. Raby, reports from Oram (Algiers), that several laborers, who had been bitten by insects and had become affected by bad sores, were treated with a 5-per-cent solution of carbolic acid, the wounds were cauterized by nitrate of silver, and finally sprinkled with iodoform. On applying the latter it melted and was completely decomposed. Raby then mixed the ingredients with a little water, and the consequence was a real explosion, accompanied by the copious evolution of nitrous fumes. Iodoform and nitrate of silver, when mixed, rapidly decompose each other; and this decomposition is much intensified by the addition of carbolic acid.—*Pharm. Post.*

Shaving Cream.

A PREPARATION which has simply to be smeared on the skin is prepared as follows:—

Curd Soap.....	8 oz.
Almond Oil.....	2 "
Glycerin.....	1 "
Spermaceti.....	1 "
Carbonate of Potassium.....	1 "
Water.....	16 "

Cut the curd soap into shreds and dissolve it by the aid of a water bath in 14 ounces of water. Dissolve the spermaceti in the almond oil, and while warm mix it with glycerin, potash, and remainder of the water; transfer to a warm mortar, gradually and steadily incorporate the warm soap solution, and continue to stir until a smooth paste is formed. With this incorporate a suitable perfume.—*Chem. and Drugg.*

Notes on Essential Oils.*

Oil of Almonds, bitter.—Most of this is distilled, not from bitter almonds, but from peach kernels, chiefly imported from Syria. At present, nearly every order calls for oil deprived of hydrocyanic acid.

Artificial oil of bitter almonds, now made in large quantities in the aniline industry, has not acquired much favor either in perfumery or in the manufacture of liquors. Where the question of cost is important, perfumers or soap-makers use oil of mirbane. For all refined purposes the natural oil is preferable.

[The term "artificial oil of bitter almonds" has often been carelessly used by writers to designate very different products. A brief note on the subject will be useful to many of our readers:

1. **True Oil of Bitter Almonds** is an aldehyde of the aromatic series: $C_6H_5.COH=C_6H_5O$. This exists in nature, in various plants or parts of plants, being produced when amygdalin and emulsin are present; together with water. It is, however, also possible to prepare it artificially. We have, therefore, two varieties of the true oil.

a. **Natural Oil of Bitter Almonds**, which may be prepared from bitter almonds, or cherry-laurel leaves, or peach kernels, apricots, or cherry kernels, or any vegetable products containing amygdalin and emulsin. The natural oil has a milder and finer flavor than that to be mentioned next.

b. **Artificial Oil of Bitter Almonds**. Though artificial, this is nevertheless identical with the true oil. (We use the word "true" here in this sense, that we wish to make a distinction between these two varieties of "true oil of b. a." and the altogether distinct substitutes next to be mentioned.) Oil of bitter almonds is, chemically, the aldehyde of benzol, hence called *benzaldehyde*. It may be prepared artificially in many ways, not only from benzol, but even from toluol, by reduction. The natural oil in its crude state contains nearly thirteen per cent of anhydrous hydrocyanic acid, and is, therefore, exceedingly poisonous, unless completely deprived of this substance. The artificial oil never contains any hydrocyanic acid naturally. But it has been stated that, when the natural oil is deprived of the hydrocyanic acid, it is liable to be more rapidly oxidized in the air and to keep less long, and the artificial oil is said to be purposely mixed with hydrocyanic acid for the same reason. It seems, however, that it is nevertheless practical to put on the market oil of bitter almonds entirely deprived of hydrocyanic acid.

2. **Imitation Oil of Bitter Almonds**. There are two varieties, neither of which have any close relation, chemically, with the true oil, except that they are likewise derivatives of the benzol or toluol group.

c. **Nitrobenzol**. This is benzol in which 1 atom of hydrogen is replaced by nitric peroxide, or nitrogen tetroxide: N_2O_4 or NO_2 . Its composition is, therefore: $C_6H_5.NO_2$. This is known in trade as *oil of mirbane*, *mirban-essenz*, etc. It resembles oil of bitter almonds closely by its odor, but differs from it in other physical and chemical properties.

It is *poisonous*, and should therefore never be used for flavoring medicines or articles of food or drink. It is now known that its poisonous effect has something to do with the fact that it cannot be oxidized to an acid in the organism, while this is possible in the case of the following:

b. **Nitrotoluol**. This is toluol, in which 1 at. of hydrogen is replaced by NO_2 , viz.: $C_6H_4.NO_2$; or $C_6H_4.NO_2.CH_3$.

This has an odor nearly resembling the preceding, and is therefore likewise used as a substitute for oil of bitter almonds. While nitrobenzol, when pure, solidifies on cooling to $+3^\circ C.$ ($37.4^\circ F.$), nitrotoluol does not freeze even when cooled to $-20^\circ C.$ ($-4^\circ F.$). It is stated to be non-poisonous [?]; when taken internally it is converted into some variety of nitro-benzoic acid. As it is difficult for any but a professional chemist to distinguish between these two imitations of oil of bitter almonds, it is best to regard them both as *poisonous*, and to never use them for internal administration.]

Sch. & Co. lay great stress upon the fact that their oil of mirbane easily crystallizes near the freezing-point, which is a criterion of purity.

Oil of Anise.—The production of aniseed in 1885 has been 25 to 30 per cent less than in 1884, and though prices have not advanced in proportion to this deficit, yet they have considerably stiffened, and are likely to advance still more.

During 1885, about 700,000 kilos of Russian aniseed have been distilled at Leipzig. Other brands of anise yield oils which do not appear to be so well liked. This is particularly the case with East Indian aniseed (*not star-anise*), which has recently been offered in the market.

Apiol.—A new source of parsley seed has been made available in India, and it would be easy to produce apiol on a larger scale, if the demand should increase.

Oil of Balsam of Peru, so-called, is really not an essential oil, but chiefly cinnamain, the characteristic liquid, odorous, principal constituent of balsam of Peru.

[**Oils of Bergamot, Lemon, and Orange.**—Contrary to what had been predicted by interested parties a short time ago, the price of these oils has experienced a sudden drop during the first week in April. It is believed that a further decline will occur in a short time.]

Oil of Cajuput is constantly losing in importance. The total production in 1871 was estimated at 4,000 gal. During recent years, the amount allowed to reach the market has been adjusted to the demand, so as to prevent a further reduction of the price.

Most of the oil is produced in the island of Celebes.

Oil of Camphor, Japanese.—It had already been announced by Schimmel & Co., in their last September report, that the Japanese oil of camphor contains more or less of *safrol* ($C_{10}H_{16}O_2$). This statement has excited a lively interest among scientists, since the presence of this body in oil of camphor had previously escaped all those who studied the substance. The special facilities available in Schimmel & Co.'s factory, and the accumulation of by-products, present in small proportions only, has enabled the chemist of this firm to ascertain that Japanese oil of camphor also contains *eugenol* ($C_{10}H_{16}O_2$), though in such minute quantities that it will be practically impossible to extract it on a commercial scale. Wallach, when examining oil of camphor (*Liebig's Ann.* 227, 296), found a large proportion of *dipentene* in that portion which boils at 180° – $185^\circ C.$ Hence, up to the present time, the following bodies have been recognized with certainty as constituents of oil of camphor.

1. *dipentene*, boiling at 180° – $185^\circ C.$
2. *camphor*, " " 205° "
3. *safrol*, " " 232° – 234° "
4. *eugenol*, " " 245° – 247° "

But there are certainly still other bodies present. It is already known that there is another terpene ($C_{10}H_{16}$) in the oil, boiling below $180^\circ C.$ Besides, it contains a body which must have its boiling-point between 230° and $235^\circ C.$, but which has not yet been obtained free from safrol. Schimmel &

Co. state that this body behaves like terpin, since it is converted, by boiling with dilute acids, into hydrocarbons boiling between 172° and $185^\circ C.$ The presence of *terpinol* ("terpineol") in the resulting product is rendered probable, to judge from the odor, but could not yet be demonstrated chemically. Finally, there is a constituent which boils at about $250^\circ C.$ It has not yet been obtained in a pure state.

Hikorokuro Yoshida has recently published the results of his studies on oil of camphor, and announced it to contain:

7% terebenten,	boiling at 156°	C.
20% citren,	" " 172° – 173°	C.
22.8% camphor,	" " 205°	C.
50% camphorogenol,	" " 212° – 213°	C.

Schimmel & Co. have absolutely failed to find the last-named body, and suspect that Yoshida experimented with oil of an entirely different source.

The *light oil of camphor*, obtained during the distillation of the crude oil, has been largely used in the manufacture of varnishes, as it costs less than oil of turpentine. According to the statements of competent authorities, it is not only suitable for mixing with boiled linseed oil, but also for the solution of copal and other resins. When inhaled, it does not produce the disagreeable or injurious effects which ordinary oil of turpentine often produces. The wholesale price of this oil, at the factory, is 42 marks (\$10.42) per barrel of 150 kilos (322 lbs.).

Oil of Cassia.—Increased inquiry has recently been made for *filtered* oil; and certain large perfumers use the rectified oil exclusively. Schimmel & Co. state that the loss during rectification is 15 to 20%.

Oil of Cedarwood.—The ordinary American oil of cedar is unsuited for the purposes of perfumery. It is obtained as a by-product in lead-pencil works, the vapors given off by the cedarwood during drying being conducted through condensers, where the oil is condensed. It consists only of the lower boiling portion, while the real valuable part—which is the higher-boiling fraction—remains in the wood.

Oil of Cedar, Virginia.—Schimmel & Co. appear to have had the same experience in Europe, which we have had here several times, namely, that the name Virginia Cedar is sometimes supposed to denote a species of true cedar, while it really means a species of Juniper.

Oil of Citronella.—The annual production of this oil in Ceylon, during the last three years, is estimated at 9,000 cases. In addition to this there were quite considerable quantities produced along the Malabar coast and the Straits settlements. The New York house of Schimmel & Co. has contracts for the current year for not less than 3,000 cases. [This oil is largely used by soap-makers, chiefly in the finer grades of yellow-soap, or honey-soap.]

Oil of Cloves.—Some eleven years ago there was only one kind of oil of cloves known in Germany, and this was all distilled in Hamburg out of clove-stalks. To-day this product plays only a very inferior rôle. Good Zanzibar cloves yield about 18% of oil.

[Cloves and similar spices may be imported duty-free in Germany, for the purpose of distilling off the essential oil; but the importation and manipulation is under strict surveillance by the officers of customs. The residues from the distillation cannot be utilized, but must be destroyed in presence of the customs officers. Hamburg is at present yet a free port, situated outside of the rayon of the German customs [though in a short time it will cease to be so], and large quantities of cloves and other species are there distilled for their essential oils. But as the process is carried on outside of the

* Abstract from the circular of Schimmel & Co., Leipzig. April, 1886.

custom lines, it does not need the supervision of customs officers, and the manufacturers, therefore, are at liberty to dispose of the residues as they please. It is not to be wondered at, therefore, that a most lucrative business is there carried on with spices partly or wholly deprived of oils. One Hamburg firm even had the audacity to offer clove-stalks for sale, with the agreement to take back the exhausted stems at a certain figure.]

Oil of Copaiba.—This appears to be altogether prepared by the New York house, since New York is one of the principal markets for the Para balsam. The oil is colorless, like water, and is used not only medicinally, but very largely also as an adulterant of other essential oils. Its presence may be detected, after some practice, by the odor—particularly on comparing the suspected oil with a sample of absolutely genuine oil.

Oil of Cubebs.—New York being now the central market for cubebs, and the business in this drug being in the hands of a few monopolists, it is impossible to either give a binding quotation or to make any reliable predictions as to the future market. It may, however, be expected that the production of cubebs, which has greatly diminished during the last few decades, will increase again in consequence of new plantations started in Ceylon.

Oil of Elemi.—Schimmel & Co. offer, for the first time, the essential oil prepared from Manila Elemi. It has a strong and agreeable odor, resembling fennel, mace, and dill, and is comparatively cheap. It has the spec. grav. 0.880, and its larger portion boils at 172° to 176° C. Should there be any demand for this oil, abundant quantities could be had at reduced prices.

Oil of Fennel.—East Indian fennel, from *Foeniculum Panmorium* DC., a variety of *Foeniculum vulgare* has recently been examined by Sch. & Co. It was found to contain less essential oil than the German, and its odor was unsuited to the European taste.

Oil of Geranium.—For purposes of perfumery only the fine African oil is used, and, to a slight extent, perhaps, the Spanish oil. The latter, as well as the French, are produced only in small quantities and are principally consumed for scenting snuff.

[The Algerian, Spanish, and French oil of "geranium" are derived from species of *Pelargonium*, particularly *Pelargonium roseum* Willd.]

So-called **Turkish Oil of Geranium** [derived from *Andropogon Schœnanthus* L., of northern and central India, and also known under the names of rusa oil or oil of ginger, or oil of gingergrass] is misnamed "Turkish," because its importation into Turkey has formerly been monopolized by certain firms in Constantinople. It is very commonly used as an adulterant of oil of roses. Those portions of the import which were not used as an adulterant were put on the market as "Turkish oil of geranium," and only in recent times has the more direct source of the oil been drawn upon. It arrives from India either by direct shipments or by way of Arabia and Egypt. [Incidentally, it may be remarked here that the native distillers—most of them situated in the Nimar district, which is the most westerly of the Central Provinces of India—adulterate their product more or less. Prof. Dymock has been assured that all the commercial oil is more or less adulterated (*Mat. Med. of West India*, p. 687); and a comparison of the commercial product with that distilled by himself confirmed this statement. He was informed that the distillers are regularly supplied with oil of turpentine from Bombay. Flückerger (in *Pharmacognosie des Pflanzenreiches*, 2d ed., p. 157) gives the following account:

This oil, known in Turkey under the name of *idris yaghi* or *entersah*, is brought by Arabic dealers in large flasks to Constantinople and Kazanlik (the district in the Balkans where the best oil of rose is produced). The odor of the oil is quite agreeable, but is improved by shaking the oil with water previously mixed with some lemon juice, whereby any copper present is also removed. The washed oil is then exposed for two or three weeks, in shallow vessels, to the rays of the sun, whereby its odor becomes still more like that of oil of rose. Through this circumstance, as well as through its pale yellowish color, it forms a favorite adulterant for oil of rose, being either added to the latter after distillation, or being sprinkled upon the freshly gathered roses before distillation. Since oil of rose thus adulterated does not separate its crystalline stearopten as easily as while pure, the manipulators prefer for this purpose the oil of rose obtained from the higher situated regions in the Balkans, since this is richer in stearopten, and will stand a larger addition of the oil of geranium. There is no test known to discover the presence of the latter. Flückerger says that it may be assumed to be more or less present in every commercial oil of rose.]

Oil of Ginger.—Has been mostly prepared from African and from Bengal ginger, which were cheapest. Japanese ginger was found less suitable. Samples of this, peeled, were found so inferior in appearance and heavily daubed with chalk, that it is not likely to come into competition with Cochin or Jamaica ginger.

Oil of Hops has been in lively demand, particularly for export (from Germany). The numerous experiments made to find a method of preserving hops for an indefinite period have led to the result that this is only possible by withdrawing its essential oil, since the substance *valerol*, which is contained in hops, is gradually converted into valerianic acid, and ruins its aroma. It is now possible to remove the essential oil without injuring the hops in the least, and foreign (non-German) brewers appear to have adopted the plan of adding a solution of oil of hops to the beer after the brewing process is completed.

There are two varieties of this oil prepared by Sch. & Co., one being made from the original hops (not sulphured), known as oil of hops, and the other from lupulin. 100 parts of lupulin contain about 1½ of valerianic acid.

Oil of Lavender.—The French oil of 1885 has turned out to be an exceedingly fine article. The best is that which is distilled in the higher regions of the Piedmontese Alps.

Lavender-camphor has been several times asked for, for scientific purposes. Sch. & Co. have heretofore been unable to separate any, but they promise to continue their experiments.

Oil of Linaloe.—The supply of this article is liable to suffer interruptions, owing to the difficulty of transporting it from the interior of Mexico.

According to Flückerger, linaloe wood was known in Mexico already since the 17th century. According to Collins, it is said to be derived from *Elaphrium graveolens* Kunth. More recently it has been stated that it is from *Amyris Linaloe* (nat. ord. Therebinthaceae). [A more detailed account will be found in this JOURNAL, 1885, p. 157.]

Oil of Olibanum, possessing the full characteristic odor of olibanum or incense, is now for the first time put on the market by Sch. & Co.

Oil of Orange, Bitter, is regarded as a rarity, and the small stock obtained by Sch. & Co. is not likely to last until the next season.

Oil of Orange, Sweet.—The most renowned quality of this oil—a specific

product of Calabria—is that known as "muscat" (nutmeg), and it is this brand which is offered by Sch. & Co.

Oil of Orris.—Though it has been shown by Professor Flückerger that the so-called oil of orris consists chiefly of myristic acid, mixed with a very small quantity of an ethereal oil, to which the odor is due, yet it would not be economical to isolate this oil (though it could be done), as it would probably be the most costly article of commerce. The present form is undoubtedly the only one practicable.

Oil of Peppermint and Menthol.—It is conceded as a fact by Sch. & Co., that menthol is now obtained from American oil of peppermint. At the same time it is regretted that large quantities of dementholized oil of peppermint are now in the market. The business in menthol has recently been quite unsatisfactory, one reason being that the demand for menthol cones appears to be diminishing. A great change has also taken place in the value of menthol. The high price paid for Japanese menthol seems to have brought about a perfect craze for cultivating peppermint in Japan, so that the production has been nearly doubled. It is easy to foresee the consequences. A further unfavorable influence upon the price has been the competition of the menthol prepared from American oil of peppermint. [Regarding the views taken by Sch. & Co. of the new American menthol industry, and the merits or demerits of the American product, we prefer to await further development before venturing to express a decided opinion.]

Sch. & Co. draw attention to the fact that the "liquid Japanese oil of peppermint," "extra steam refined," offered by a firm in Yokohama, is unsuitable for confectioners or other similar purposes, owing to its bitter and oily after-taste.

Messrs. Schimmel & Co. have received notice that Dr. E. Beckmann, Privat-Dozent at the University of Leipzig, has discovered a process by which the liquid portion of oil of peppermint (menthene) can be converted into menthol. They have received permission by the discoverer to announce this fact, which will certainly revolutionize the whole peppermint industry.

Oil of Pine Needles.—The demand for the ordinary oleum Pini sylvestris is exceeded by that for the more expensive extra-fine quality introduced a few years ago, which is used with preference as the material for the well-known "ozone" sprays. Another similar oil, likewise in active demand, is that obtained from *Pinus Pumilio*, or mountain pine. Opinions are divided as to which variety is the most suitable for the favorite and refreshing toilet or rather hygienic articles known as "Coniferen-Geist" (Pine-Essence), or "Tannenduft" (Pine odor). Some perfumers prefer the oil from the balsam fir (*Abies balsamea*), which has a very pleasant, refreshing odor that may be materially improved by the addition of a small quantity of oil of sweet orange. The finest product of this class, however, is that obtained from the silver fir (*Pinus Picea* or *Abies Picea*), now for the first time introduced by Sch. & Co.

The pine-needle oil obtained from the Canada pine (*Pinus Canadensis*) is also coming more into use.

Oil of Sandal-wood.—The oil prepared in India, being distilled over a naked fire, always has a burned odor, and is unsuited for perfumery. Fine sandal-wood oil is prepared by the European distillers from imported wood.

[E. M. Holmes has recently made a report on so-called "West Indian Oil of Sandal-wood," which is probably derived from a tree belonging to the nat. fam. Rutaceae. This so-called

West Indian sandal-wood is exported from Venezuela, but its true source is not known, though the wood, in appearance and odor, very much resembles the true sandal-wood.]

Oil of Sassafras and Safrol.—Under Oil of Camphor, the fact of the presence of safrol in the former has already been mentioned. Sch. & Co. appear to be quite justified in advising consumers of sassafras oil to give safrol a trial, in place of the ordinary oil. Safrol is the true aromatic principle of oil of sassafras—an absolutely pure substance, of definite properties. Pure safrol, such as is prepared by Sch. & Co., has the specific gravity 1.108–1.100 (at 16° C.), boils at 232° C. (449.6° F.), and congeals to a firm mass when cooled to –1° C. (30.2° F.). It is colorless, has a fine, pure odor of sassafras, and is likely to displace the natural oil completely.

Oil of Ylang-ylang.—[Compare NEW REM., 1881, 98.] Mr. Steck, the predecessor of Sartorius—manufacturer of one of the finest brands of this oil in the Philippine Islands—states that the chief flowering-season of the ylang-ylang tree (*Cananga odorata*) falls between March and May. If, however, the trees are prevented from fruiting by removal of many flowers, it continues to produce the latter nearly all the year round. The color of the oil does not depend upon the place of growth of the plant, but only upon the temperature. The colder it is, the lighter colored is the oil, the greater is the yield, and the lighter and thinner is the oil.

The New Non-metallic Element: Germanium.

FROM the report on this new element, by Clemens Winkler, in the *Berichte d. Deutsch. Chem. Ges.*, 1886, 210, we take the following:

During the summer of 1885, there appeared in one of the mines ("Himmelsfürst Fundgrube") of Freiberg a rich silver ore of unusual appearance, in which A. Weisbach recognized a new mineral which he named *argyrodite*. Th. Richter made a preliminary blow-pipe analysis of the mineral, and found in it principally sulphur and silver, besides a small amount of mercury, which metal had previously not been known to occur at Freiberg.

On making a full analysis of the mineral, Winkler found it to contain 73–75 per cent of silver (the variation depending on the purity of the mineral), 17–18 per cent of sulphur, 0.21 per cent of mercury, and minute traces of iron and arsenic. Repeated analyses, however, showed a deficit of 6 to 7 per cent, which could not be accounted for by following the usual method of qualitative analysis.

It required weeks of laborious work to convince the author that agyrodite contained a new element, very much resembling antimony, but yet sharply distinct from this. This element has been given the name *germanium*. Its discovery and isolation was very laborious and often doubtful, because the minerals accompanying the agyrodite contained both antimony and arsenic, which have great resemblance to the germanium, and greatly interfere with its isolation, as there are no sharp methods of separation known.

The properties of the new element, so far as they have been studied, show that it belongs to the so-called non-metallic bodies. Further details regarding its properties will be given hereafter, when the researches of the discoverer have been carried out on a more enlarged scale.

"Only a Cold!" was the reply of a patient to a query by Abernethy. "Only a cold;" repeated the renowned doctor; "what the devil would you have, the plague?"

Sandal-Wood.

Fragrant odors are not often centred in the woody fibre of plants, but are more generally confined to the bark, leaves, and flowers. There are, however, some few woods which have an aromatic odor, such as the myall and musk woods of Australia, the cedar, camphor, and especially the sandal-wood. A few details about the latter may be interesting:—There are more than a dozen species of the genus, which are chiefly restricted to Asia, Australia, and Oceania. The Indian species are *Santalum album* and *S. myrtifolium*. The Australian species are *S. cygnorum*, *S. lanceolatum*, *S. oblongatum*, *S. obtusifolium*, *S. ovatum*, and *S. venosum*. The species found in the Pacific islands are *S. Austro-Caledonium*, Vieill., which is superior to that of most other countries, owing to the strength and fineness of its odor; *S. ellipticum*, *S. Freycinetianum*, *S. paniculatum*, and *S. Yasi*. But many of the species are not well determined, nor their localities clearly defined.

Santalum album, one of the Indian species, has long furnished the chief supply of wood, which is shipped from the Madras Presidency. In Mysore the sandal-wood trees form a Government monopoly, bringing in a revenue of about £40,000, the wood selling there at £35 to £40 a ton.

S. Freycinetianum is imported from Cochin China and the Pacific islands, but it is less esteemed, the color of the wood being paler, and the odor less pronounced.

It is only the central portion of the tree which produces the scented yellow wood constituting the sandal-wood of commerce. The quality of the wood depends on the quantity of the oil contained in it, as indicated by the smell when freshly cut or burnt. The old trees produce the best, and of them that part of the wood near the root is the most prized. The distillation of oil from the roots in India is carried on chiefly at Mangalore. Five cwt. of wood yield about 80 lbs. of pure oil, thus giving a profit of nearly 37 per cent. [On Oil of Sandalwood, see the Report on Essential Oils, elsewhere in this number.—ED. AM. DR.]

At one time the sandal-wood tree was plentiful in Mauboom, but is now practically extinct, and the same might be expected of the Mysore forests, were it not for the fact that they are under State conservancy. At the best, however, the work of destruction proceeds apace, and it will require careful watch of the authorities to prevent extinction.

The present average annual output in the native State of Mysore is computed at 1,000 tons of heart-wood, yielding an income of about £40,000, and considering that all exterior parts of the sandal-wood tree are inodorous, the destruction of this comparatively small forest plant must be something enormous to produce the quantity of wood mentioned.

The essential oil is used as the basis of nearly all ottoes manufactured in the country.

The wood is made into boxes, in which steel does not rust; curiously carved cases, fans, and other fancy articles; and it is also burnt in the temples.

The Mysore wood is divided into five classes. The first three go almost exclusively to China; the hollow fillets and the small broken pieces, which are not included in the five classes, going to Arabia, where they are either burnt whole, for the sake of the fragrant smell afforded, or ground up and used with other ingredients as incense. Of that sent to Surat the inferior descriptions of billets are burnt by the Parsees in their fire temples, and are also used at Hindoo funerals when the friends of the deceased are able to af-

ford it. The wood, rubbed down with water and worked into a paste, is used by all Hindoos in their caste marks, and is also employed as an external application for headaches and some skin diseases. The powder of the roots and of the heart-wood is used by the Chinese against gonorrhoea, and is applied to wounds. They also consider it carminative, stomachic, and stimulant. The oil, which is yellow and of the consistency of castor oil, is much esteemed for its odor.

As opium ministers to the sensual gratification of the Chinese and others of the same class, so sandal-wood ministers to their superstition. Without it no religious ceremony can be conducted, and its absence is a mark of poverty, so that the Oriental of India and China will sacrifice anything rather than allow that, on the proper occasion, sandal-wood should not be burnt. The roots, which are richest in oil, and the chips go to the still, while the Hindoos who can afford it show their wealth and respect for their departed relatives by adding sticks of sandal-wood to the funeral pile. A very large quantity was used up in this way at the cremation of the late Maharaja of Mysore; and also, in 1874, at that of the Hon. Narajah Wassodeo, Minister of the Legislative Council of Bombay.—*Chem. and Drugg.*

Incense and Myrrh.

SEVERAL recent numbers of *Petermann's Mittheilungen* (1886, Nos. 1 and 2) contain an interesting report of the travels of Eduard Glaser from Hodeidâ to Sanâ in Yemen (Southern Arabia), made in the spring of 1885. According to the account given by the author, he appears to have passed through territory heretofore untrodden by non-Mohammedan Europeans. Being thoroughly familiar with the Arabic language, and being provided with Turkish documents which establish his right to visit this territory, he enjoyed facilities superior to those possessed by other travellers in Arabia. It seems, however, that there has been a great unwillingness, on the part of learned orientalists in Europe, to interest themselves in his person or mission. The real cause of this neglect is not known to us, but we presume that he had not previously been known and recognized as a person whose scientific statements and deductions could be fully trusted.

The author, among other interesting matters, describes the coffee district of Harâz, whence the so-called Mokhâ coffee used to be derived. Along with the coffee-shrubs are met with, in all directions, large numbers of plants that would undoubtedly be of great interest to the specialist in botany, as he would probably recognize among them many plants already known to the ancients, among them the myrrh-shrub which occurs here as well as along the whole western slope of the Serât range.

The author announces that in his prospective work on the ancient geography of Yemen, he will give an account of the traffic in incense, regarding which he has acquired some very valuable Arabic manuscripts. He has also taken pains to collect seeds of most of the odoriferous plants growing in Yemen, as well as samples of the various gums or gum-resins found there and used as incense ("bukhurât"), such as *lubân* (or *luban*, the Arabic term for incense) and *mirr* (that is myrrh). These seeds were to be dispatched by him to Europe as soon as possible—his letters are dated in May, 1885—for the purpose of being planted.

It is, therefore, to be hoped that the botanical origin of myrrh will shortly be definitely settled.

The Cochineal Industry in Guatemala.

The following paragraphs describing a visit to a cochineal range in Guatemala are taken from the *Montreal Daily Star*:

"In this queer country the raising of hemipterous insects of the bark-lice family—especially the coccus cacti or Spanish cochinilla—is a profitable if not a pleasant industry. In this portion of Guatemala vast plantations are given up entirely to the cultivation of the 'Indian fig,' or nopal, of the genus *Cacti* (*Opuntia cochinilifera*), upon which these bark-lice feed.

"Senor Espanosa's plantation of *Opuntia cochinilifera*, which was the one we visited, includes nearly a thousand acres, and the *modus operandi* of cultivating the insect is most curious. They require about the same care that is ordinarily bestowed upon silkworms, and the occupation is not more disagreeable among crawling bugs than wriggling worms. Immediately before the annual time of violent rains great branches of the nopal, covered with insects, are cut off and stored in a building erected for the purpose, to protect them from the weather. At the close of the wet season, four or five months later—about the middle of October—the plantations are again stocked from these supplies, by suspending little nests made of henequin, maguey, jute, or any sort of woody fibre upon the spines of the growing cacti, each nest containing about a dozen females. Warmed by the tropic sun, the insects soon emerge from their semi-comatose condition, and begin to lay eggs with marvellous rapidity, each female producing more than a thousand young. These spread over the plants with marvellous celerity, the young females attaching themselves to the leaves and immediately swelling to incredible size, adhering so closely to the nopal as to become almost a part of it, resembling vegetable excrescences rather than animated creatures.

"In this condition they are gathered for cochineal, none but the pregnant females being valuable for commercial purposes. The males are comparatively few in number—not more than one to two hundred and fifty females—and are of no use for coloring purposes, but, as in the higher orders of existence, escape most of the pains and perils of life. While the males are thus left to disport themselves undisturbed the females are picked off with a blunt knife, collected into baskets and killed by dipping them into boiling water, or baking them in a heated oven, or on plates of hot iron. The first crop is gathered about the middle of December, and subsequently several more of as many successive generations—the last for the year being in May. These tiny insects, of the family Coccidæ, are in the form of rounded scales, the body covered with deep transverse wrinkles, abdomen of dark mulberry color, with short black legs, and bristly on the posterior part. The male has two erect wings, the female none.

"A laborer of ordinary skill can pick only about two ounces of cochineal bugs in a day. These lose at least two-thirds of their weight in the process of drying. As it requires no less than seventy thousand insects to weigh a pound, and the average retail price of cochineal is only sixty cents per pound, it may be inferred that the business is by no means a sinecure. By the method of immersing the insects in boiling water they turn to a reddish-brown hue, losing much of the white powder with which the wrinkles of their bodies are loaded. When dried in an oven they retain this, and then their color is gray, and when killed on hot irons they become black. This is the cause of the varie-

ties known in the market as 'silver grains,' 'black grains,' and 'foxy,' the latter (killed by the first plan) being preferred. When dried, the cochineal presents the form of convex grains, each about an eighth of an inch in diameter, with the transverse wrinkles still visible.

"An inferior quality of insect, called sylvestre, which is indigenous to a wild species of cactus, is frequently gathered and sold for the better variety, and sometimes the species become mixed without design on the part of the planter. Occasionally a bug distemper breaks out and devastates entire plantations, as in Guatemala a few years ago, when the haciendados were obliged to clean out the old stock, root and branch, and begin anew. The coccus cacti are also fed upon by birds, mice, and larvæ—the latter destroyers sucking out their bodies and leaving only the empty skins."

Dialyzed Pitch.

CHARLES J. ULRICH, of Havana, Cuba, has suggested a new mode of purifying pitch for medical purposes. The pitch is first filtered to free it from vegetable substances, earth, root, etc., and the heat employed to liquefy it during this process serves also to expel any volatile substances. Normally, pitch is composed of dense empyreumatic, resinous matters of dark color; and, secondly, of a liquid element which holds the former in solution. The acrid and nauseous odor of raw pitch is due to the presence of pyroligneous acid, formic acid, wood spirit or methylic alcohol, aldehydes, acetones, methylic acetates, creasote, cyanides of ammonia, and benzines; and these substances, by means of bicarbonate of sodium, become capable of removal by dialysis. A dialyzer of parchment paper is placed in distilled water, the level of the water being the same as the level of the liquid in the dialyzer, and the whole is allowed to rest for three days, when the water is changed. The first water is tested with sulphuric acid, and if it effervesces, the process is continued for the same period, when the water is again changed and tested. This changing of the water is repeated until it no longer liberates carbonic acid when treated with sulphuric acid. The dialyzed pitch is then concentrated slowly with the aid of heat and mixed with coarser sand, and the evaporation of water by means of heat is continued. The mass is then cooled and placed in a suitable vessel, where it is treated with a solvent capable of taking up the pitch, e. g., alcohol and glycerin. This fluid extract of pitch is adapted for a variety of medicinal uses, such as the treatment of bronchitis, diseases of the throat, ulcers, diseases of the skin, etc.

The Best Materials for Dialyzers.

SINCE Graham's time it has been generally accepted that thin parchment paper is the best material for a dialyzer. A variety of substances have lately been experimented with by Mr. Zott, of Munich (*Wied. Ann.*, 2), and he pronounces gold-beaters' skin the best; it has always at least twice the separative effect of parchment paper, and sometimes much more. In a list of relative permeability, gold-beaters' skin being valued as 1, we have, next, sow-bladder 0.77, parchment paper 0.5, 2 mm. leather 0.025, and so on to the fifteenth, caoutchouc 0.0001. For solutions which injure organic membranes, common earthenware cells (like those in Grove's battery) are best; but their effect is sixty to seventy-five times less than that of gold-beaters' skin.—*Nature*.

The Assay of Extract of Belladonna

PROF. WYNDHAM DUNSTAN and Mr. Francis Ransom, in a paper on the chemistry of the pharmaceutical preparations of Atropa Belladonna (in *Pharm. Journal*, March 13th, 1886)

give the following process for estimating the amount of total alkaloids (atropine and hyoscyamine) in commercial alcoholic extract of belladonna:

"It was necessary to devise an accurate process for the estimation of the total alkaloid, and one which should, if possible, be free from complexity. This we have succeeded in doing by means of a modification of the process which was employed for the same object with the root itself. The method now proposed consists in dissolving about 2 grammes of the extract with a gentle heat in water acidulated with hydrochloric acid. The liquid is filtered, and the residue washed with dilute hydrochloric acid until the washings yield no precipitate with a solution of iodine in potassium iodide. The clear liquid is then rendered alkaline with ammonia, and extracted with chloroform until nothing further is removed. Two separate extractions with half its volume of chloroform are usually sufficient for this purpose. The chloroform is next twice agitated with its own volume of water acidulated with hydrochloric acid. It now only remains to render this liquid alkaline with ammonia, and to twice extract it with half its volume of chloroform. The chloroform, when spontaneously evaporated, yields a residue of the crystalline alkaloids (atropine and hyoscyamine), or when evaporated at 100° C., a residue of fused alkaloids, which should be dried until it has a constant weight. In these experiments, no advantage is gained by evaporating the liquid and drying the residue at a lower temperature, for we have found that a residue so prepared undergoes no appreciable decomposition at the higher temperature of 100° C. That the residue obtained in this way is entirely alkaloidal in its nature was proved by the method of precipitation as 'periodide.'

[The authors then give the results of analyses of samples of commercial extracts of belladonna, which yielded between 1.65 and 4.45 per cent of total alkaloids, most of them averaging about 3 per cent. An extract was prepared by the authors from a root which assayed 0.3 per cent of alkaloid, by means of strong alcohol. It was found to contain 2.8 per cent of alkaloids. On preparing from it another extract, according to the directions of the new Brit. Ph., the product contained only 1.7 per cent of alkaloids. Hence, to obtain extract of belladonna of uniform alkaloidal strength, the kind and quantity of the menstruum must be exactly determined.]

Extract of belladonna contains, in addition to the alkaloids atropine and hyoscyamine, chrysotropic acid, $C_{11}H_{11}O_6$, probably a naphthalin derivative, which causes alkaline solutions of the extracts to have a distinct fluorescence (Kunz, *Arch. Pharm.* [3], xxiii., 722). It also contains much dextrose, and the authors have recently obtained evidence of the presence of another alkaloid, which is being further investigated.

Withania Somnifera.

WITHANIA SOMNIFERA is a solanaceous plant very common along the shore of the Mediterranean. Dr. Trebut has undertaken to investigate the grounds for its local reputation for hypnotic powers, and has extracted an alkaloid whose sulphate is crystalline, and which has hypnotic action, but does not produce mydriasis. He calls the alkaloid "somniferine."—*Lancet*.

The Volumetric Estimation of Inorganic Nitrites.

MR. G. A. ATKINSON lately read a paper on this subject before the Royal Society of Edinburgh. We give the more important parts. The author thinks it necessary, not only to use some excess of permanganate, but he advocates a large excess, namely, about twice the required quantity, so as to reduce the chances of error. As will be seen, he prefers Mohr's reagent (ammonio-ferrous sulphate) for estimating the excess of permanganate. We should prefer oxalic acid. He says:

"The standard solutions I would recommend are:

"1. A 1-per-mille of permanganate of potassium, carefully titrated against one of the ordinary substances—metallic iron, ferrous sulphate, etc.

"2. A 12.5-per-mille solution of ammonio-ferrous sulphate, containing an equal amount (12.5 C.c.) of strong sulphuric acid. 1 C.c. of this will approximately decolorize 1 C.c. of the permanganate solution, and the contained acid, while assisting its action, preserves the solution. It must, obviously, whenever used, be carefully standardized against the permanganate—a process occupying only five or ten minutes.

"3. A solution of pure sulphuric acid, 1 in 10, is most convenient, but the pharmacopoeial (almost 1 in 12) is suitable enough.

"4. A 1-per-mille-solution of the nitrite, unless it be such a nitrite as nitrite of silver, the base here possessing a high atomic weight, when 2-per-mille may be employed."

Now, as we are dealing with the action of reducing agents on permanganate of potassium, it is important to consider whether or no in such reduction oxygen be given off, as alleged by Jones. I find none with such solutions as I have above described, although with stronger undoubtedly there is. Nor do I find any escape of oxygen when one acidifies the permanganate, unless the solution be boiled; nor do I consider any secondary decomposition occurs between ammonia or ammonium salts, as might be possible from the fact that nitrous acid decomposes ammonia with the evolution of nitrogen.

Finally, in what order should the solutions be added? I have repeatedly experimented in every possible way, and only obtain really satisfactory results by adding the nitrite solution slowly to the acidified permanganate.

As to the details of the method: In to a beaker of about 500 C.c. capacity, about 200 C.c. of distilled water is poured, and then about twice the quantity of permanganate required to oxidize the nitrous acid in 50 C.c. of nitrite solution is run into the same vessel, and followed by 10 C.c. of diluted sulphuric acid (1 in 10), or 12 C.c. of the pharmacopoeial solution. Now slowly add 50 C.c. of nitrite solution, the nozzle of the pipette being kept well below the surface and moved round so as to agitate the contents of the beaker. When almost empty the nozzle is brought above the surface and little distilled water run over its exterior to wash off any adhering fluid from the beaker. After two or three minutes the amount of un-reduced permanganate is estimated by the ammonium ferrous sulphate solution, the end point being obtained by zig-zag titration. The ordinary processes for calculation now give the amount of nitrite.

To test the method, nitrite of silver solution containing in every 50 C.c. .02465 grain of nitrous acid was employed, and in six consecutive estimates I found the quantity indicated varied between .02463 and .02466 grain.—*Pharm. Journ.*, March 20.

Rose Oil in Germany.

MR. JAMES T. DU BOIS, the U. S. Consul in Leipsic, recently wrote as follows to the Department of State: One of the most interesting events in the manufacturing world of Saxony, during the past year was the successful attempt of Schimmel & Co., of Leipsic, to produce at their chemical factory, located in this city, a marketable rose oil, extracted from roses grown on Saxon soil.

Last year an effort was made in a small way, and it resulted in the production of nearly seven pounds of genuine rose oil, and this success incited the firm to further endeavor. Several large florists have been engaged to cultivate a certain amount of roses for next year, and it is expected that many acres of ground now used to produce the prosy bean and cabbage will be devoted to the cultivation of roses for the use of this factory.

It is claimed by Schimmel & Co. that the climate of Saxony is quite as favorable to the abundant and healthful growth of roses as is the climate of the Balkan region, and that the Saxon rose has a perfume as full and rich as its sisters from the more southern climate. It is further asserted that, aside from the delicate and superb perfume of the Saxon rose oil, it possesses an important quality: that of solidifying at + 32° C., while the Turkish oil solidifies at + 20° C. The Turkish oil, however, costs only 700 marks per kilo. At present, while the Saxon oil is priced at 1,500 marks per kilo, yet, as the latter finds a ready market, it is evident that it is of a finer quality than the Turkish production.

During the preceding year about 2,300 kilos of rose oil were produced in the Balkan district, and this year 2,200 kilos is the estimated product, at a value of 1,540,000 marks.

The experiments made by Schimmel & Co. show that the natural centifolia rose (*Rosa canina*) is the one best adapted to the production of rose oil in this climate, and consequently a large amount of this species will be cultivated in the neighborhood of Leipsic during the next season. It seems to be necessary to manipulate the roses immediately after they have been plucked, and for this reason only those grown in the district of Leipsic will be used for the present. The firm believe seriously that there is a great future for the Saxony rose oil, and, as an earnest of their conviction, have extended the facilities of their establishment in order to produce, on a grand scale, rose oil, rose water, rose pomade, and rose extract. From one kilogramme of the Saxon rose oil, the firm produced 300 boxes of fine rose water which were exported to the United States, and sold at a good profit.

The above being facts, the question arises: "If Saxony can produce a flower so well adapted to the production of an article so valuable and so marketable as rose oil, why should not the fertile garden spots of our own land, where the *Rosa canina* grows at the best, be turned into profitable channels, after the manner of Saxony?"

Percentage Strength of Commercial Nitrites.

MR. G. A. ATKINSON, in a recent paper on the estimation of nitrites (*Pharm. Journ.*, March 20th) states that he has found the commercial nitrites generally to contain the following percentages of the absolute nitrate, the rest being other salts.

Commercial Nitrite of	contains about	
Potassium	KNO ₃	84-86%
Sodium	NaNO ₂	94-95%
Ammonium, Solut.	NH ₄ NO ₂	12%

FORMULAS.

Prof. Bouchut's Teething-Syrup.

B Muriate of Cocaine..... 1 part.
Borate of Sodium..... 1 "
Syrup of Marshmallow...20 parts.
Syrup of Poppies.....10 "

M. Gently rub the gums with the syrup, three times a day.

Formula for an Appetizer.

DR. GUIBOUT, of Paris, recommends the following to stimulate the digestive organs and increase appetite:

Sulphate of Strychnine...0.02 gramme.
Syrup of Mint.....30. grammes.
Distilled Water.....150. "

M. A tablespoonful just before meals.

Carson's Paint.

Croton Oil..... 3 ij.
Ether..... 3 iv.
Comp. Tinct. Iodine..... 3 x.

Apply with a camel's-hair brush to produce a mild pustular eruption.

For the Nausea of Pregnancy.

Powdered Colombo root,
Powdered Sugar 15 parts.
Senna Leaves..... 4 "
Boiling Water..... 475 "

Infuse. A wineglassful before each meal.

—DR. FORWOOD, in *L'Union Médicale*.

For Water-brash.

Powdered Phosphate of Zinc... 10 parts.
Calcined Magnesia..... 8 "
Powdered Vanilla..... 1 parts.
Mix. A teaspoonful in a wineglassful of water.

—DR. MONIN, in *L'Union Médicale*.

For Hay-fever.

Camphor,
Chloroform..... 1 drachm.
Extract of Belladonna. 4 grains.
Bicarbonate of Sodium 20 "
Benzoinated Lard..... 1 ounce.

Rub together the first three, then add the lard, and, lastly, the bicarbonate of sodium.

Apply freely to the nostrils with the little finger. Dr. A. F. Samuels, of Prairie du Chien, Wis., writes to the *N. Y. Med. Journ.* that, after the failure of other remedies, this gave him speedy and permanent relief.

Hair Tonic.

THE following formula is mentioned by the *Popular Science News* as being as good as any of the advertised preparations:

Cologne water..... 2 ozs.
Water of ammonia 1 drachm.
Tincture of Cantharides... 2 drachms.
Oil of Rosemary.....12 drops.

Mix. Apply daily and wait for results.

For the Removal of Hair.

PROF. BARTHOLOW, of Philadelphia, recommends the following:

Sulphide of Barium,
Lime..... 3 i.
Powdered Starch..... 3 ij.

Make into a paste with alcohol and apply until some pain is felt, and then remove it. The long-continued use of this often results, he says, in the permanent removal of offending hair.

Removing Nitrate of Silver Stains.

DIP the fingers into a strong solution of chloride of copper. In about a minute the silver will be converted into chloride, and may be washed off with a solution of hyposulphite of sodium.

A Cough Mixture.

A WRITER to the *Med. Press and Circular*—T. S. Dowse—who has tried terebene in asthenic bronchitis, fails to secure any result from its use that he has not already obtained from a mixture which he says is "old as the hills," is a stimulant, expectorant, tonic and diuretic, and he will "back it against all the terebene in existence."

This is the way he loads his shotgun:

℞ Ammonii Carbonatis.....gr. xl.
Spiritus Ætheris Co.....℥ xl.
Spiritus Ætheris Nitrosi... ℥ xl.
Sodii Bicarbonatis.....3 i.
Syrupi Tolutani.....3 i.
Tr. Nucis Vomicae.....3 ij.
Inf. Cascariillae vel Serpentariae
vel Senegae.....ad 3 viij.

Fiat mistura, de qua cochlearia duo magna secundis vel tertiis horis exhibeantur, sæpius rariusve, prout tussis vehementior vel mitior fuerit.

An Appetizing Tonic, according to Dr. A. Fort (*Union Médicale*) consists of:

Bruised gray Cinchona Bark. 25 parts.
Bruised Bitter Orange Peel.. 5 "
Bruised Calumba Root,
Bruised Gentian Root,
Bruised Rhubarb Root,
Chamomile Flowers...of each 4 "

Percolate first with 300 parts of Cognac, and then with 750 parts of water. Dose, a tablespoonful before each meal, to improve the appetite in anæmic and debilitated persons.—*N. Y. Med. Journal*.

Frosting Brass Work.

BOIL in caustic potash, rinse in clear water, and dip in nitric acid until all oxide is removed; then dry quickly in boxwood sawdust and lacquer while warm. This gives to brass an ornamental finish.

To Render Fabrics Non-inflammable.

FOUR parts of borax and 3 parts of sulphate of magnesia are mixed together just before being used. It is then dissolved in 20 to 30 parts of warm water. After soaking the articles to be treated in this solution they are to be wrung out, and dried, preferably in open air.

Maury's Ointment.

THIS is a preparation somewhat extensively used in the Philadelphia Hospital as an application for sores and ulcers in general, and especially those of a venereal character.

℞ Ointment of Nitrate of Mercury. 3 i.
Powdered Rhubarb,
Powdered Opium.....āā 3 ss.
Simple Cerate.....q. s. ad 3 i.

Triturate the rhubarb and opium together with the cerate, until a perfectly smooth and homogeneous product is obtained. Rub the mercurial ointment with about a fluid drachm of glycerin to remove any granular condition, using a horn or bone spatula, and then mix this with the foregoing. A petrolate can be substituted for the simple cerate of the original formula, if desired.

When fresh, this ointment, if made with a petrolate, is a soft, unctuous, greenish-brown solid which melts readily at the temperature of the skin. Upon exposure to air, its color changes rapidly to a deep brown, but its medicinal properties are not impaired.

The mode of using the ointment is as follows: The part to which it is to be applied must first be poulticed with linseed meal and hot solution of chlorinated soda; after a time the poultice, with any portions of dead tissue, are removed, the skin is dried with care, and the ointment, spread upon lint, is then applied and renewed once during the day, as a rule.

Liquor Ferri Albuminati (Drees).

Solution of Chloride of Iron... 1 part.
Egg Albumen.....80 parts.

Mix well; add some hot distilled water; strain; then add cold

Distilled Water to make....500 parts

Or better: Dilute the albumen with about twice its own volume of water, add the chloride of iron, and, if necessary, heat until a clear solution has been obtained.

The product contains 0.03% of iron. "J. Nr." in *Pharm. Zeit.*, March 31st.

NOTE OF ED. AM. DR.—The solution of chloride of iron of the Germ. Pharm. has the spec. gr. 1.280–1.282, and contains 10% of metallic iron. That of the U. S. Ph. has the spec. gr. 1.405 and contains 13.03% of metallic iron. To make from the latter a solution of the same strength as that of the Germ Pharm. take

Sol. of Chloride of Iron, U.S.P., 77.5 parts.
Distilled Water.....22.5 "

Copying Ink.

THE following formula is given by a correspondent in the *Pharm. Zeit.*:

Extract of Logwood..... 100 parts
Lime-Water.....1000 "
Carbolic Acid..... 8 "
Hydrochloric Acid..... 20 "
Gum arabic..... 30 "
Chromate of Potassium... 8 "
Water to make.....1800 "

Dissolve the extract of logwood in the lime-water and let it stand uncovered for a few days. Then add the other ingredients, last of all the (yellow) chromate of potassium, and filter. This ink will improve by age, does not mould, and deposits but little sediment.

Dental Preparations.

Dr. H. Schmidt, of Prague recommends the following:

1. Red Tooth-Powder.

Magnesium Carbonate..... 75 gra.
Prepared Oystershell..... 75 "
Prepared Cuttlefish Bone...800 "
Precipitated Chalk.....800 "
Oil Cinnamon..... 10 drops.
Oil Cloves..... 10 "
Oil Peppermint..... 5 "
Carmine.....q. s.

2. White Tooth-Powder.

Prepared Oystershell.....800 gra.
Precipitated Chalk.....150 "
Pumice Stone, in very fine powder.....150 "
Oil Cinnamon..... 10 drops.
Oil Cloves..... 10 "
Oil Peppermint..... 5 "

3. Mouth-Wash.

Thymol..... 60 gra.
Tincture Guaiac..... ½ fl. oz.
Staranise, crushed.....300 gra.
Canella, grd..... 75 "
Red Cinchona, grd..... 75 "
Cloves, powd..... 75 "
Spirit of Peppermint (see note).. 3 pints.
Cochineal..... 75 gra.
Digest 24 hours and filter.

NOTE.—The spirit of peppermint meant in the above formula is not the strong spirit of the U. S. and other Pharmacopœias, but the mild spirit prepared by macerating 9 parts of fresh peppermint with 70 parts of alcohol, adding 15 of water, and then distilling off 70 parts.

4. Toothache-Drops.

Thymol..... 8 gra.
Camphor..... 45 "
Chloroform..... 10 min.
Oil Peppermint..... 90 "
Tinct. of Coca.....180 "

—After *Ph. Rundschau* (Prag)

An Improved Method for Preparing Mucilage.

ACCORDING to J. Luettke, a superior mucilage is obtained by proceeding as follows:

Put the necessary quantity of gum arabic into a bottle, add a sufficient amount of water of ammonia, and agitate so that the exterior of each lump may be thoroughly washed thereby. Then pour off the ammonia, and wash it all out with water. Now add the requisite amount of water to dissolve the gum.

The resulting mucilage is clear, and keeps well.—*Der Pharmaceut*, No. 1.

Lanolin Ointments.

MESSRS. Jaffé and Darmstaedter, the manufacturers of the new base lanolin recently introduced by Liebreich, have published a list of compound ointments made with this substance, from which we select the following. In our opinion, the list contains several which have been incorporated by mistake and without reflection or preceding study, since certain kinds of active medicines must be applied to the skin under such conditions as will render their absorption impossible.

1. Unguentum Belladonnae.

Extract of Belladonna... 10 parts.
Lanolin..... 90 "

NOTE.—Lanolin ointments made with extracts must be made without the addition of fat. All ordinary ointments made with it should have a certain proportion of lard or other fat added to them, to prevent their too rapid absorption.

2. "Emplastrum Plumbi simplex."

Lead Plaster..... 45 parts.
Lard..... 10 "
Lanolin..... 45 "

To be heated until the water evaporates. Used in eczema.
[The title appears to be incongruous.]

3. Unguentum Hydrargyri.

Mercury..... 50 parts.
Mercurial Ointment (old).. 2.5 "
Lanolin..... 12.5 "

[Mix them thoroughly by trituration in a mortar, until the mercury is extinguished; then incorporate a mixture of]

Suet..... 25 parts.
Lanolin..... 87.5 "

[The original formula, as printed on the circular, does not give any directions, and only has the ingredients above given, the two lower being separated by a dash from the three first. The total adds up 177.5 parts. A 50-per-cent ointment may be made by adopting the following proportions:

Mercury..... 45 parts.
Mercurial Ointment... 10 "
Tincture of Benzoin... 4 "

Mix thoroughly until the mercury is extinguished; then add:

Suet..... 30 parts.
Lanolin..... 15 "

which should have been previously mixed by adding the lanolin to the melted and partly cooled suet.]

4. Unguentum Potassii Iodidi.

Iodide of Potassium... 10 parts.
Water..... 5 "
Lard..... 10 "
Lanolin..... 75 "

5. Unguentum Diachylon.

Lead Plaster..... 50 parts.
Olive Oil..... 20 "
Lanolin..... 30 "

Appears hard, but melts on the skin.

6. *Unguentum Zinci.*

Oxide of Zinc.....	10 parts.
Lard.....	10 "
Lanolin.....	80 "

If this salve is intended to be kept for a long time, it is better to use benzoinated lard.

7. *Unguentum Balsami Peruviani.*

Balsam of Peru.....	10 parts.
Oil of Turpentine.....	30 "
Lanolin.....	70 "

8. *Unguentum Picis Liquidæ.*

Tar.....	20 parts.
Lanolin.....	80 "

9. *Unguentum Acidi Salicylici.*

Salicylic Acid.....	10 parts.
Lard.....	20 "
Lanolin.....	70 "

10. *Hair Pomade.*

Butter Cacao.....	5 parts.
Lard.....	5 "
Tinct. of Benzoin.....	8 "
Lanolin.....	50 "
Oil of Rose.....	q. s.

11. *Salve for Chilblains.*

Carbolic Acid.....	2 parts.
Lanolin.....	40 "
Lead Ointment (see form. 12).....	40 "
Olive Oil.....	20 "
Oil Lavender.....	q. s. or about 1.5 "

12. *Unguentum Plumbi.*

Sol. Subacetate Lead.....	8 parts.
Lard.....	10 "
Lanolin.....	80 "

13. *Unguentum Acidi Borici.*

Boric Acid.....	10 parts.
Lard.....	20 "
Lanolin.....	70 "

The original list could no doubt be largely extended. For instance, by the addition of working formulæ for: Unguentum Iodi and of various iodides.

Unguentum Stramonii.

Unguentum Veratrinæ.

Unguentum Camphoræ.

Unguentum Opii.

Unguentum roseatum, etc., etc.

[The title Unguentum should be replaced by one more appropriate to the base. *Lanolimentum*, which has already been proposed by others, seems to be preferable.]

Formulas containing Lanolin.—

The following formulas are suggested by Prof. O. Liebreich, of Berlin: (proportions in parts) 1. Nitrate of silver, 1; lanolin, 9.—2. Carbonate of lead, 30; lard, 10; lanolin, 60.—3. Lead plaster, 50; olive oil, 20; lanolin, 30. (This salve appears solid, but when applied to the skin it becomes mobile. When used for eczema, the water it contains should be evaporated with the aid of heat.)—4. Lead plaster, 1; lanolin, 1.—5. Ammoniated mercury, 10; lard, 10; lanolin, 80.—6. Mercuric oxide (yellow ?), 10; lanolin, 90 (30 of lard should be added when this is used for the eyelids).—7. Solution of subacetate of lead, 8; lard, 10; lanolin, 80.—8. Oxide of zinc, 10; lard, 10; lanolin, 80.—9. Red sulphide of mercury, 10; lard, 10; lanolin, 80.—10. Iodide potassium, 20; water, 10; lard, 20; lanolin, 150.—11. Spermaceti, 10; olive oil, 30; lanolin, 40; rose water, 50.—12. Iodoform, 10; lard, 10; lanolin, 80.—13. Chrysarobin, 10 to 20; lard, 10; lanolin, 80.—14. Tar, 20; lanolin, 80.—15. Balsam of Peru, 10; oil of turpentine, 20; lanolin, 70.—16. Boric acid, 10; lard, 20; lanolin, 70.—17. Carbolic acid, 5; lard, 5; lanolin, 90.—18. Salicylic acid, 10; lard, 20; lanolin, 70.—19. Naphthol, 5; lard, 10; lanolin, 85.—20. Lanolin, 50; lard, 5; oil of rose, 3 grains. [See editorial note on the uses of lanolin on p. 90.]

CORRESPONDENCE.

"McDade's Succus Alterans."

MR. D. S. WHITE, of Flandreau, Dakota Territory, sends us the following formula, in answer to a correspondent:

Fluid Ext. Sarsaparilla,
" " Stillingia,
" " Burdock,
" " Poke-root..... $\frac{55}{3}$ ij.
Tincture of Prickly Ash..... $\frac{3}{4}$ i.
Aromatic Elixir, enough to make... $\frac{3}{4}$ xvi.

W. WALTMAN, M.D., of Canaan, Wayne Co., Ohio, supplies this formula:

B Fl. Ext. Sarsaparilla,
" Ext. Stillingia Sylvestica,
" Ext. Lappa minor,
" Ext. Xanthoxylum Carolinianum..... $\frac{55}{3}$ iv.
M.

"Ely's Cream Balm."

WE are indebted to MR. D. S. WHITE, of Flandreau, Dakota Territory, for the following:

White Wax..... 60 parts.
Paraffin..... 30 "
Oil of Sweet Almonds.....120 "
"Saxoline".....240 "

Melt the above together and then stir well until cold.

Nitrate of Sodium..... 30 parts.
Water..... 30 "

Dissolve in a mortar and then mix the above salve with it thoroughly; then add:

Oil of Lemon..... 10 parts.
Oil of Orange..... 2 "

H. & W. K., of Berrien Springs, Mich., kindly send a formula for the same article, which is essentially different in its ingredients from the foregoing:

Carbonate of Bismuth.....gr. xv.
Thymol.....gr. iij.
Oil of Wintergreen..... $\frac{m}{ij}$.
"Vaseline"..... $\frac{3}{4}$ i.

Tartrazin is the name of the sodium salt of a newly discovered sulphonic acid, belonging to the aromatic series, which was discovered in the laboratory of Binschedler in Basel, and is the representative of a new series of new coal-tar colors of great importance. It is one of the few artificial colors which can dye wool or other animal fibre a fast color. Its specific color is yellow, but derivatives of it will no doubt be prepared of other tints.

Danger of Abbreviations in Prescriptions is pointedly shown in an item in the *Lancet* taken from a Russian journal. A Polish physician, wishing a patient to be dry-cupped in eighteen places, wrote the order with the number "18" followed by the letter "b," to stand for the Polish word for cups; this, again, was followed by the word meaning dry. The dresser, mistaking the "b" for 6, actually dry-cupped the unfortunate victim in 186 places. As the Russian journal remarks, it is well that it was not wet cupping that was ordered.—*N. Y. Med. Journal*.

Polygonum aviculare was recommended at a late congress of Russian physicians by Dr. Roschtschinin, of St. Petersburg, as a remedy in bronchial catarrh and asthma. According to Werner, the plant contains considerable quantities of an alkaloid. A glassful of an infusion of 6 drachms to the quart may be taken thrice daily with milk, kefir, or sweetened water. Chronic bronchial catarrhs were said to disappear in from 10 to 30 days. It was also serviceable in whooping-cough, but useless as a remedy in phthisis.—*Med. Press*.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,703.—Ink for Type-Writer Ribbons.

We have had inquiries about the best kind of ink to be used in type-writer ribbons, and, as we have no experience on this subject ourselves, we have applied to a better source of information. The communication on p. 81 has been kindly placed at our disposal by the author.

No. 1,704.—Magnesium, metal (O. J.).

Metallic magnesium is now made on the large scale by electrolysis, and, in consequence thereof, the price has very considerably declined. The Chemische Fabrik auf Aktien (formerly E. Schering), of Berlin, produce it in large quantities, and you may obtain information as to price, etc., by applying to them.

No. 1,705.—Acetico-Tartrate of Aluminium (N. N.).

In 1881, Julius Athenstaedt, of Bremen, published a paper on certain double salts of aluminium (*Pharm. Zeit.*, 1881, No. 93, p. 694), namely, the aceto-tartrate, aceto-citrate, and aceto-lactate. He did not, however, state the method of their preparation. The *Deutsche Medicinische Wochenschrift* of June 4th, 1885 (vol. xi., No. 23, p. 390) contained a paper by Dr. Max Schaeffer, of Bremen—the contents of which were alluded to in our March number, page 51, but where the name Altenstart should be changed to Athenstaedt—in which the use of several of these compounds is highly extolled. This paper is preceded by a letter from J. Athenstaedt, in which the latter draws attention to the special compounds discovered by him and experimented with by Dr. Schaeffer, namely, the aceto-tartrate and the glyceracetate of aluminium. But even here the method of preparation is not given. We have ascertained since then that the processes have been patented, and this sufficiently accounts for the absence of any mode of preparation in the papers above referred to. While it is not likely that these compounds will, under the circumstances, be much used in legitimate practice, we are bound to give our readers the desired information, so far as we are able. It is reported that the aceto-tartrate of aluminium is prepared from the two-thirds basic acetate (to be described next) by dissolving the latter in a sufficient quantity of tartaric acid solution, and then evaporating to dryness, or precipitating with alcohol, either of which will produce about the same result, as has been ascertained by analysis.

The acetate of aluminium mentioned above has the composition $Al_2(C_2H_3O_5)_3 \cdot H_2O$, and may be prepared by making a concentrated solution of aluminium acetate (from hydrated alumina and acetic acid) and adding to it, under constant stirring, and at a temperature of 30°–35° C. (86°–95° F.) a sufficient quantity of sulphate of sodium in coarse powder. The separation of the two-thirds basic acetate takes place because this is insoluble in a concentrated solution of sulphate of sodium. The compound, however, soon becomes crystalline and insoluble, and in this form it is sold in the market, and is used in dyeing. It may be rendered soluble by the addition of some acetic acid.

The aceto-tartrate of aluminium is in form of shining lumps, resembling gum arabic, having the odor of acetic

acid and a sweet, astringent taste. It is soluble in 1 part (and even less) of cold water, but insoluble in alcohol, ether, and in glycerin [*E. AM. DR.*].—

Another compound recently described by Athenstaedt is the *glycero-acetate* of aluminium, which is a white, somewhat hygroscopic powder, of a weaker odor and taste than the preceding.

Both of the above compounds are decomposed by heat.

As to the glycero-acetate, it has long been known that glycerin has the power of preventing the transition of amorphous and soluble acetate of aluminium into the crystalline and insoluble modification. A formula for preparing it is given by Hager:

100 parts of potash alum and 8 parts of dry aluminium hydrate (the latter previously tritured with a little of the potash alum) are mixed in a flask with 160 parts of water and heated to boiling with occasional agitation. The liquid is allowed to become perfectly cold (being occasionally shaken), and 84 parts of crystallized acetate of sodium in coarse powder then added. After standing a few hours, and having been frequently shaken, small portions of 90-per-cent alcohol are gradually added until the total weight amounts to 620 parts. After allowing it to stand for several hours in a cold place, the mixture is strained through a linen cloth, the strainer pressed out and the strained liquid filtered in a covered funnel. The filtrate amounts to 410 to 420 parts, and contains 10 per cent of anhydrous "two-thirds acetate of aluminium." This liquid is now mixed with 20 parts of diluted acetic acid (1.040 sp. gr.) and enough glycerin to bring its weight to 500 parts. Thus diluted it contains 8 per cent of the anhydrous acetate. It must be preserved in a cool place.

No. 1,706.—Indelible Ink for Labels (Eo.).

Richmond has recommended the following two varieties of ink which are suitable for labels, are not affected by acids and do not corrode the pens:

1. Blue.

Ferrocyanide Potassium	3 parts.
Stronger Water of Ammonia....	2 "
Tartaric acid.....	2 "
Water.....	240 "

Dissolve and filter. Then add

Citrate of Iron and Ammonium.160 parts.	
Water of Ammonia.....	40 "
Aniline Blue.....	8 "
Gum Arabic.....	70 "

This ink is at first yellow to purple, afterwards blue.

2. Black.

Add to the preceding:

Pyrogallie Acid. 20 parts.

This imparts to it first a brown color, and afterwards renders it black.

We have not tried these formulæ, and, therefore, cannot say how they turn out in practice.

Another new formula is given by the *Südd. Apoth. Zeit.*, as follows:

Nitrate Silver	20 parts.
Water Ammonia.....	50 "

Dissolve, and add:

Gum Arabic.....	10 "
Sugar.....	5 "
Bitartrate Potassium ...	10 "
Caustic Soda	10 "

Finally, add a well-tritured mixture of

Lampblack.	1 part.
Water.....	50 parts.

No. 1,707.—Naphthalin for Internal Medication (E. W.).

Naphthalin has been used with success by Prof. Rossbach in quantities up to 5 Gm. (75 grains) per day, in acute and chronic diseases of the intestines, in infantile diarrhoea, the

first stages of typhoid fever, tuberculous diseases of the intestines, etc. Other physicians report equally favorable results in these diseases, and ascribe its beneficial effects to its aseptic action, which is mostly exerted while it passes through the intestines, since it is so little soluble that not more than traces of it are probably absorbed while in the stomach, nor is much of it probably absorbed while it passes through the intestines.

No. 1,708.—Drawing out Glass tubes (D. E. S.).

This correspondent sends us a sketch of a glass-tube which he wants to use for a condenser. He desires to have it slowly taper off at one end to a small caliber, and also to slightly curve it. It is evidently a large-size tube which our correspondent wishes to reduce in this manner; and he has probably tried the experiment already, and failed.

When a glass tube is heated at any place uniformly about its whole circumference, until the glass begins to be soft, and the tube is then withdrawn from the flame, and gentle traction made at both ends, the tube will lengthen out at the softened spot. The extension will taper off from either side towards the middle (where the glass was hottest), and this tapering portion will be the longer, the larger a portion of the glass had been exposed to the flame. As it is impossible to heat more than a few inches properly with the ordinary burners, and the common burner, besides, does not give enough heat in a short time, it is either necessary to use several burners, or preferably blast-flames, revolving the tube constantly, or, the tube may be pushed through a muffle furnace, or heated on a blacksmith's forge, care being taken that the fire is clean, that the tube be heated slowly and uniformly, that it be kept in a straight line, and, that no traction is made until it has been removed from the fire. It is impossible to give such directions, in print, as will insure success, without corresponding experience. Our correspondent may, therefore, utilize our suggestions and try his skill. When the tube is once properly drawn out, which may be done so that either portion will serve the same purpose, and the two parts have been severed by a file, the tapering portion of each tube may be curved by heating it once more.

No. 1,709.—Liquid Blueing (D. C. W.).

The best liquid blue is prepared from indigo-carmin, by converting the latter into a soluble salt and mixing it with water, or by mixing it with water as it is.

Place 8 parts of the strongest commercial sulphuric acid (or 5 parts of fuming Nordhausen sulphuric acid) into a stoneware vessel, standing in a tub of cold water, and add to the acid, gradually, 1 part of best indigo reduced to a very fine powder. Stir the mixture frequently with a glass-rod and do not allow it to become too hot, by the too rapid addition of indigo. In about forty-eight hours the mixture will have changed to a very dark-blue pasty mass. In this form it is known as "indigo composition" or "chemic blue" (chemisch blau). When diluted with about twice its weight of pure water it forms the ordinary liquid blue of the shops. As this liquid is very acid, it is often replaced by a modification in which part of the acid is neutralized by an alkali.

Taking the quantity of sulphate of indigo (or sulphindigotic acid) obtained from the formula before given, it is diluted with about twelve times its weight of pure water, and about two-thirds saturated with potassa. The sulphindigotate of potassium then falls down as a dark-blue, coppery-looking powder, soluble in 140 parts of

cold, and about 90 parts of boiling water. This is sold both moist and dry, and is known as "indigo paste, soluble indigo, blue carmine, soluble blue, etc." It forms the best liquid blue. In place of potassa, soda or ammonia may be used.

Liquid blue may also be made by suspending fine blue in water. Of course, this is not as salable as the other, but it will often answer the same purpose. The finest blue ultramarine, when thoroughly mixed with water, forms an excellent blueing.

No. 1,710.—Egg Albumen (J. S.).

Egg albumen, as sold in the market, is the white of egg, dried. It occurs in irregular scales, of a yellowish or yellow color, and sells at about fifty cents per pound. A large proportion of that sold here comes from abroad; most of it, as we are told, from Russia, where there are large establishments engaged in the breeding and keeping of fowl.

There are varieties in the market which are to be had at so low a price that it is justifiable to suppose them to be mixtures of blood- and egg-albumen. Still, even these cheap samples which we have seen have a very good appearance and not unpleasant odor.

A good sample of albumen should be soluble, within twenty-four hours, in 80 parts of lukewarm water, forming a viscid, almost or entirely colorless liquid, which should not be too turbid. When heated to boiling, all the albumen contained in the solution will coagulate. The liquid, separated from the coagulum, when evaporated, should not amount to more than 5 per cent of the original weight of the albumen employed. If more is left behind, adulterations (dextrin, gum arabic, gluten, etc., etc.), may be looked for.

Pyridine, the colorless and strong-scented liquid obtained from certain organic bodies by dry distillation (see *AM. DRUGGIST*, March, p. 58) is thought to be the serviceable agent in most asthma-cigarettes. To employ it in asthma, four or five grammes are to be poured on a plate, and placed in a small room in which the patient is to remain for 20 to 30 minutes, three times a day. It is said that the inhalations cause no disturbance of general health.

Hydriodic Acid is growing in favor as a remedy for asthma. A syrup containing 1 per cent of the acid may be taken in doses of 3ss. to ʒi., although doses of ʒi. are usually quite sufficient. It should be well diluted, and when liable to cause eructations of gas or disturbance of the stomach during digestion, should be taken before meals and repeated three or four times daily.

THE University of Basle possesses a skeleton prepared by Vesalius and bearing the date 1543. It is believed to be the oldest anatomical preparation known to exist.

DR. DUBOIS, a Frenchman, has made a number of experiments upon the ability of dogs to assimilate vaseline. Two dogs were fed exclusively on soup in which the usual fat was replaced with vaseline, one taking 15 and the other 25 grammes in ten days. Their general condition remained good; there was no loss of appetite, diarrhoea, nor vomiting, and they increased slightly in weight.—*Nature*.

HENRI CONDREAU, writing of the Napé Indians, of the Amazon region, says that they make use of a poison against enemies, which is extracted from a species of *Arum* and which, in small doses, produces death by anaemia and innutrition after a month or two; strong doses produce immediate insanity.—*Science*.

American Druggist

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[ORIGINAL COMMUNICATION.]

THE COLORING MATTER OF LIRIODENDRON TULIPIFERA.

BY PROF. J. U. LLOYD, OF CINCINNATI.

THIS tree is recognized by country people as either yellow or white poplar. The characteristics by which the variations in name are produced reside in the production in one case of a peculiar yellow coloring matter that imparts a yellow tinge to the wood. This yellow substance is deposited in considerable proportion in the bark of the root and may be obtained as follows:

Exhaust fresh bark of root of *Liriodendron tulipifera* with alcohol, add some water and distil the alcohol. After some days filter the liquid and evaporate it to a semi-solid consistence, then incorporate this thoroughly with alcohol in considerable amount. Filter the alcohol from the extractive precipitate and add an excess of ammonia water to the filtrate. The brownish-yellow precipitate is then to be washed with alcohol and dried by spreading it upon glass and exposing to the atmosphere. It forms brilliant deep brownish-red transparent scales that separate easily from the glass and appear very much like dark-colored scales of citrate of iron.

This substance dissolves slowly in water, producing a yellow liquid that is changed to a dark reddish-yellow by addition of an alkali. It dissolves readily in alkaline water. It is insoluble in alkaline alcohol or in benzol, chloroform and ether. Its color in alkaline aqueous solution is very much lightened by addition of excess of an acid.

It combines neither with acid nor alkali, failing to neutralize either of them, and its precipitation from alcohol by addition of ammonia seems to be simply due to the fact that it is insoluble in such a menstruum. It is tasteless and is odorless; being of interest only from the fact that it is a characteristic coloring matter of this magnificent American tree,

JAPANESE PEPPERMINT AND ITS RELATION TO OTHER MINTS.

THE botanical relation of the Japanese peppermint plant to other members of the genus *Mentha* has been studied by numerous authorities during the last few years, since menthol has become an important article of trade. As is well known, the mints are one of the most difficult genera of labiate plants to study, there being an uninterrupted rate of transitions from one species to another, so that it is

tirely absent in wild-growing plants, at least in Europe.

Japanese peppermint has been referred, at one time, to *Mentha arvensis* L. var. *javanica* G.

But Mr. Holmes found that every specimen of this plant which he could find had the taste of *Mentha viridis* L., and not of *Mentha piperita* L., and the same he found to be the case with *Mentha arvensis* L. var. *vulgaris* Benth. Mr. Holmes succeeded, after much trouble, in getting specimens of both the Chinese and the Japanese peppermint and found them both to have the botanical characters of *Mentha*

arvensis as defined in De Candolle's *Prodrromus*, the leaves being stalked, ovate-lanceolate, and the hairs on the stems and pedicles reflexed, those of the calyx being erect-patent, and those of the upper surface of the leaf appressed; the calyx being bell-shaped, with acute lanceolate or narrowly triangular teeth. A specimen of peppermint obtained through Prof. Gray from the United States, and labelled *Mentha canadensis* var. *glabrata* was also found to have a peppermint flavor, and to be practically identical with the Chinese peppermint plant. The Japanese plant differs slightly from the Chinese.

As the name *Mentha arvensis* var. *javanica* had, up to that time, been applied to two entirely different plants, Mr. Holmes desired to bring about their separation, and, in view of the difficulty of classifying the species of the genus *Mentha*, consulted eminent specialists. Their opinions differed considerably, but, on the suggestion of Mallinvaud, the name *Mentha arvensis* var.

piperascens has been provisionally adopted. The last-mentioned adjective has been here and there copied erroneously as *purpurascens*. There are two varieties of the Japanese plant, one having purplish stem and leaves, while the other is green. In this it is analogous to the English plant, which also grows in two varieties, commonly designated as "black" and "white."

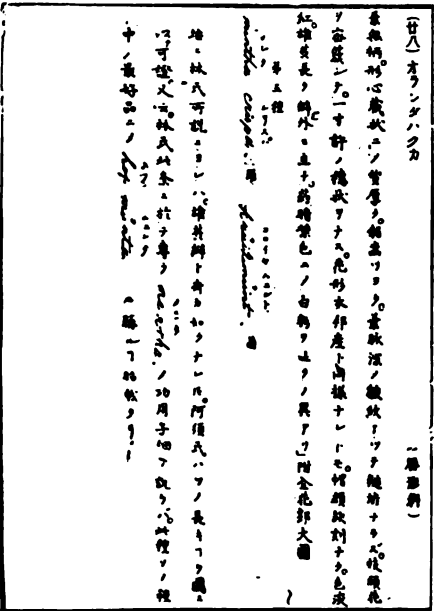
There are several Japanese works on botany which devote space to a



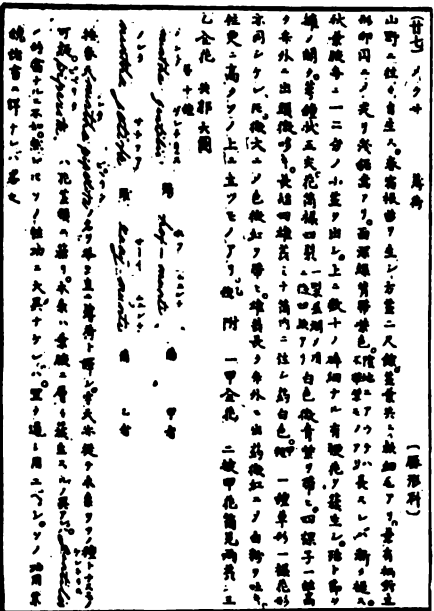
Mentha crispa (Oranda Hakuku).



Mentha arvensis (Megusa).



Mentha crispa.



Mentha arvensis.

often absolutely impossible to decide where one species ends and the other begins.

Bentham believes that the ancestor of our peppermint is *Mentha hirsuta* L., but at the same time it is very similar in characters to *Mentha viridis* L. It is also certain that the cultivated species of peppermint possess a characteristic, more or less penetrating odor, the intensity of which diminishes as the plants recede from cultivation, and is nearly or en-

description of the plant as it grows in Japan. Mr. Jackson and several other writers have already referred to some of them, but only cursorily. As there is but little known about these Japanese works among the English-speaking people, and, as we possess excellent editions of them, we present on page 101 facsimiles of two of the illustrations contained in the *So moku dzu setsu*, together with the original text and translation.

The facsimiles are reduced electrotypes of photographs made by ourselves.

The translation was made by a Japanese friend of Mr. Albert M. Todd, of Nottawa, Mich., namely, Mr. K. Tamari, of the Imperial University, Tokio, at present engaged in special studies at Lansing, Mich.

A few words regarding the work and its author may first prove of interest.

One of the foremost pupils of Dr. Siebold, during his residence in Japan (1822-29; 1859-62), was *Iinuma Yokusai* (or *Iinuma Chojun*), who afterwards began the publication of what was intended to be a complete Flora of Japan, with accurate illustrations, Japanese text, and scientific (Latin) equivalents. The title of the work is "*So moku dzu setsu*," and twenty books of it were issued in 1856, when the author unfortunately died. His son took up the uncompleted task, but was also soon afterwards carried off by death. The twenty parts issued comprise the first section, namely, all herbaceous plants (with exclusion of the grasses) both wild and cultivated, arranged according to Linné's system, and accompanied by 1,215 excellent drawings, made from nature, and giving every detail necessary for the diagnosis of the plants. In the text the Japanese name or names are supplemented by the Chinese equivalents, if such are known, also by the Latin names (in Roman characters), and by the Dutch equivalents, if any exist. Sometimes the work is incorrectly quoted under the title *Soo bokf*. The edition which we possess is the improved second one, published in 1874 by Tanaka Yosiwo. In this edition the posthumous labors of both authors, so far as they refer to the already published portion of the work, have been incorporated. Mr. Tanaka Yosiwo was assisted in the editing of the work by Ono Motoyoshi. Dr. Savatier, of Yokosha, undertook to control the correctness of the Latin names printed upon the plates. In the two plates reproduced above, the Latin and Japanese names have been transferred by us to the bottom, because the scientific name given on the plate of the Japanese peppermint plant was not correct. The name given on the original plate is *Mentha arvensis* var. *vulgaris* Benth., which belongs to a different species. The illustration, however, exactly represents the Japanese plant.

The work was to comprise altogether forty volumes. In addition to the twenty volumes issued, Iinuma Yokusai had completed the manuscript for ten additional volumes, and, in the preface of the second edition, we are promised their speedy publication. Up to the present time, however, we have heard nothing more of them.

So moku dzu setsu, vol. XI. [Plate 27], MEGUSA. *Mentha arvensis* L. [var. *vulgaris* Benth. This should now read: Var. *piperascens* Malinvaud].

Megusa. Hakuku. (var. A.), grows wild occasionally. Shoots out in spring from its perennial roots. Stem square, two feet high; stalks and leaves downy; leaves opposite, petiolate, ovate but pointed, serrated; the upper surface deep green; under surface of a purplish color—in shady places, sometimes not purplish—which, when the plant is fully grown, looks faded. In the fall, many short branches come out at every node,

which soon bear flower or spikes. The flower is bell-shaped, corolla toothed, white, with greenish-purple tint, containing four stamens and one projecting pistil.

Var. B. Habits and growth of this are the same as those above mentioned for var. A. It is a little larger, stamens and corolla of light reddish hue, holding white pollen dust on the reddish stalk; pistil still more projecting.

Var. A. Latin: *Mentha gentilis*; Dutch: *Hof-Munte*.

Var. B. Latin: *Mentha sativa*; Dutch: *Zaaymunte*.

Mentha piperita L. resembles *hakuku*, but the former has terminal flowers, while the present variety has axillary flowers. They have, however, the same merit [properties], so that the name may be applied to them both.

In connection with the preceding, we also copy the next following plate, representing *Mentha crispa* L.

[Plate 28.]

ORANDA * HAKUKU. Labiatæ [Dutch or European *Mentha*].

Leaves not petiolated, heart-shaped, somewhat thick, deeply serrated, smooth but wrinkled by veins. Flowers on terminal spikes about one inch. Although the flower is like that of the native plant, "there is no indentation on corolla," which is of a light reddish color; stamens inserted in corolla.

Latin name: *Mentha crispa*; Dutch: *Kruizemunt*.

Linné describes the stamens as being of the same length as the corolla, but the plate represents them longer. Regarding the present variety of *mentha*, Linné says that it seems to be superior in quality to Hofmunte (*M. arvensis*).

NOTE. We have given the translation verbatim, in order to show how the Japanese author has treated the subject.

Coca.†

(Continued from p. 88.)

Cultivation.

THE minute and laborious care which must be bestowed upon the cultivation of coca, under various local and climatic difficulties, induced already the Spanish conquerors to turn the work over to the natives. Even to-day, the ordinary labor connected with the industry is performed almost exclusively by the Indians. When a territory is to be devoted to this purpose, the virgin forest is cut down, the stumps burned, roots dug up, and the soil turned over. If the location is along a mountain side, small narrow terraces are formed, the number of which depends on the steepness of the declivity, in such a manner that the rain-water may easily drain off.

In order to render the soil compact, small stone walls are erected along each terrace. By means of a smooth iron, holes of about three inches square and six inches deep are dug, into which some seeds are placed, and the young plants afterwards transplanted into somewhat deeper holes dug in straight lines. Upon level ground, it is customary to make parallel furrows separated by small walls (*umechas*) constructed of loose stones, along the sides of which the young plants are arranged. The sowing takes place near the end of the dry season, between November and January.

The fully ripe, dark scarlet-red fruits, after being dried in the shade, are very carefully sorted, all damaged ones being thrown aside. This is done by throwing them into water, when the

sound ones fall to the bottom, while the others float on top. The sound ones are kept under water until the flesh separates from the kernel.

According to Clerc, the sowing is done in large propagating inclosures, and the young plants protected by shrubs or mats. During the succeeding year, when the plants have attained a height of about one foot, they are transplanted into open fields, being set about six inches apart, in furrows of a depth of two feet, and about three feet distant from each other.

The final location of the shrubs requires the greatest care and attention, as upon this depends both the quality and the quantity of the future harvest. The soil around the separate plants must be constantly kept loose to permit the ready access of moisture, and during the dry season a regular system of artificial irrigation must be employed, care being taken that this is not carried too far, since this would render the shrub weak, the leaves light-colored, and cause them to assume a blackish color when dried. Besides, great attention must be paid to remove all weeds (*maleza*, *hurari*), as their presence not only injures the growth of the plants, but is also said to impair the flavor of the leaves.

While the plants are young, they are generally protected from the direct rays of the sun by mats or other contrivances. Sometimes Indian corn or manioc (*yuca*) is planted in the intervals of the furrows; occasionally the *cocales* are surrounded by coffee shrubs. It has been demonstrated by Bolognesi that the leaves of plants which have been thus protected are thin and tender, without having lost anything in flavor or taste, while those exposed to the sun are thick and brittle.

Under favorable circumstances the shrub grows rapidly, flowers soon, and will attain a height of about six feet. As it is considered injurious to the leaves to allow the shrub to exceed a certain size, it is periodically clipped so that it may not exceed about three feet. Those shrubs which are intended to be allowed to develop fruits and seeds, must not be deprived of their leaves.

Harvesting, Drying, Packing.

The period of harvest varies according to the quality of the soil. In the yungas of Bolivia, the first is collected twelve to eighteen months after transplantation. In Peru it is postponed to the fifth, in Vitoc to the third year. This first crop, though but scant, furnishes the best and most esteemed quality. The leaves are stouter, of a darker green color, but without any prominent taste, and are consumed on the spot where they are collected.

The subsequent harvests (*mitas*) take place at different times. The better the soil and the greater care is bestowed on the shrubs, the more frequently may they be repeated. According to Poeppig, there are plantations where leaves may be collected all the year round, as they do not all "ripen" at one time. Other observers say, every 2½, 3, 3½, or 4 months.

A short time (about 3 months, often earlier) after the first crop has been taken off, the shrub has regained its leaves. Then the second crop is collected, which is the most abundant, and occurs in March or commencement of April (*mita de Marzo*). A very scant crop is next obtained in June or beginning of July (*mita de San Juan*), and, finally, another in October or November (*mita de todos Santos*).

Only ripe leaves are taken, that is, those which are stiff and easily broken off. The size and color of the leaves are considered immaterial. Ripe leaves which are not plucked off usually drop of their own account just before the rainy season.

(Continued on p. 115.)

* NOTE.—The Japanese Oranda is the adjective of Holland.

† Abstract of a pamphlet entitled: "Das Cocablatt. Eine pharmakognostische Abhandlung von Dr. Josef Nevinsky, Assistent an der Lehrkanzel für Pharmakologie und Pharmakognosie an der K. K. Universität in Wien." 8vo, Wien, 1885. (With the sanction of the author.)

ALARM SIGNAL FOR POISON-BOTTLES.

A PROPOSITION has recently been made to introduce a system of warning by an electric bell whenever the poison closet is opened or a bottle removed from a stand, which communicates with the alarm bell. The apparatus devised by Schuch & Wiegell, of Berlin, for this purpose, is shown in the accompanying cut (after *Pharm. Zeit.*). It consists of the battery P, the contact plate on which the [morphine] bottle stands, and which is shown in detail in Fig. 2, and the bell. Whenever the bottle is removed from the stand, the light spring, which had been depressed by it, rises, and completes the electric circuit, causing the bell to ring.

This method is shown here, not because we believe it will be generally introduced, but to illustrate the simple manner in which such an apparatus can be constructed. As a method of giving warning to the prescription clerk that he is dealing with a dangerous article, it is bound to be a failure, inasmuch as it will take but a short time for customers to ascertain the meaning of the continual tingle—tingle, many of whom will be frightened at the large variety of "poisons" the young man behind the counter apparently has to handle.

We believe, however, that the principle may be applied in a different manner, namely, so that the dispenser be given an unmistakable warning without the attention of the customer being attracted. At a place in close



Alarm-signal for poison-bottles.

proximity to the prescription balance, and so situated that it must necessarily be seen, the electric current may cause to appear (by the circuit being opened or closed) some conspicuous danger-sign (a scarlet or brick-red disk, for instance), which will strike his eye when going to the balance to weigh out the article. Of course, provision would have to be made for causing the signal to disappear, either automatically or mechanically. And arrangements would have to be made in stores where more than one prescription balance is in use, and several poisonous articles are to be weighed out at the same time. All these difficulties could be overcome. We mention the above merely to show that electricity can be made useful in drug stores. Of course, there are many other ways in which the attention of the dispenser can be arrested besides electric signals.

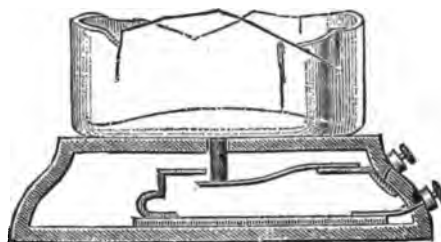
A Simple Poison Guard.

SAMUEL CONSTABLE, writing to *The Lancet*, says: "Over the corks or stoppers of all the poisons put a closely-fitting capsule (it can be made of common strong paper), which must be removed before the cork or stopper, thus rendering two operations necessary before the drug can be dispensed."

STILL another poison guard is suggested by the *Western Druggist*. A strip of steel may be firmly riveted over the mouth of the morphine bottle, the neck having been first plugged with a torpedo, so arranged as to explode and shatter the steel when the bottle is opened. If the clerk survive,

he will know that the shock meant morphine.

Benzoin, nearly two hundred years old, and shipped by one of the vessels of the Dutch East India Company, in a vessel which was wrecked in Table Bay, has recently been recovered from the sea in quantity of over one ton. The cases in which it was packed bore the marks originally painted on them, as legibly as when new. One of the marks reads: A° 1691, showing that it was either shipped or packed in 1691.



AN IMPROVED WASH-BOTTLE.

SOMETIMES, when using washing-bottles, the operator is annoyed by the retrocession of the water in the exit-tube at the moment when blowing through the air-tube is interrupted. This may be prevented, according to M. Wernecke, by constructing the exit-tube in the manner shown in the cut. The main exit-tube is bent in form of an U, and the upper limb squarely cut off. Upon this is slipped a piece of rubber tubing closed at the other end with a piece of glass rod, and provided with a slit. A piece of glass tubing is slipped over the rubber connection, and in the outer orifice of this glass tubing the curved glass jet is fastened by means of a rubber cork. When air is forced into the flask by blowing into a, the water is forced through the slit b, and made to pass out through the pointed orifice. When the blowing is interrupted, the slit closes automatically, and any water present in the glass-tube in front of the slit will thereby be prevented from receding into the flask.—After *Chem. Zeit.*



Wernecke's safety wash-bottle.

Kelline.

MOUSTAPHA announces the discovery in *Ammi visnaga* a ternary substance having narcotic properties, and causing, in animals, vomiting, paraplegia, irregularity of the heart's action, and retarded respiration. The fruit has been used as the basis of a tonic and astringent gargle in ulceration of the mouth and gums. Decoction of the seeds, in daily doses of 150 grammes, has been used as a remedy for rheumatism. Ointment made of triturating kallah seeds with oil or fat has been used as an application for rheumatic joints. Decoction of 18 to 20 grammes of the seeds in 160 grammes of water is a reputed remedy for gravel, and the leaves have been used in the form of cataplasm.—*Lancet*.

(ORIGINAL COMMUNICATION.)

STOP-COCKS FOR PERCOLATORS

BY E. V. ZOELLER, OF TARBORO, N. C.

FOR some time past I have used a novel kind of stop-cock to control the flow of liquid from percolators, and have found it of great convenience and advantage. It is an article well-known to any pharmacist, yet I do not know that it has ever been suggested for this purpose before. It is simply a "sprinkler," or sprinkle-top stopper, of such size that it will fit into the orifice of the percolator. There are numerous styles of these "sprinklers," and it is perhaps immaterial which kind is used. Only, they should have a stem of proper diameter, adjusted to the size of the percolator, and should permit the liquid to pass at any rate of flow that may be desired, either in drops or in a stream. These "sprinklers" fit very nicely in the "Oldberg" pattern percolators.

In my judgment they are a great improvement over the rubber cork with glass-tube and rubber-tube attachment.

On the Best Vehicle for Salicylate of Sodium.

F. HELLWIG, apothecary at Baruth, Germany, some time ago sent a communication to the *Archiv d. Pharmacie* (vol. 224, 80) in which he relates his experience with vehicles for disguising the taste of salicylate of sodium. A lady had presented the following prescription:

R Sodii Salicylatis..... 20
Syr. Flor. Aurant..... 80
Aque destill..... 250

M. S. A tablespoonful three or four times a day.

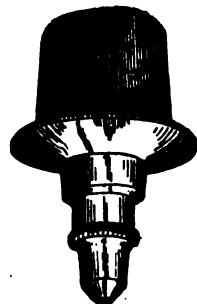
The prescriber appended a note, in which he directed the prescription to be often repeated, and the syrup to be changed from time to time. He also directed that the salicylate of sodium should be administered in wafers or other form, if the patient desired it.

The apothecary supplied, at first, a bottle of the mixture, also 10 Limousin capsules and 10 gelatin capsules, each of these containing 1 Gm. of the salt. After a while the lady asked to have the mixture repeated, complaining that the capsules, when they dissolved in the stomach, caused a disagreeable burning sensation to ascend from the stomach to the mouth. The apothecary, this time, prepared the mixture with syrup of orange peel, and ever afterwards the lady preferred this vehicle to any other. She also discovered by accident that the disagreeable sweet, mawkish after-taste caused by the remedy is best obliterated by a small dose of brandy containing common salt [presumably saturated with salt.—Ed. AM. DR.], and the hot taste of the latter overcome by eating a piece of chocolate.

Mr. Hellwig, who is himself a victim of rheumatism and compelled to take the remedy, confirms the above from his personal experience.

Iodide of Potassium in Spasmodic Asthma.

DR. J. A. ORMEROD reports the result of using iodide of potassium in thirty-six cases of spasmodic asthma. The symptom most amenable to the remedy was the disposition to nocturnal recurrence of the attacks. This was very noticeable and the attacks returned when the remedy was stopped. Five or ten grains given three times daily suited best in most cases.—*The Practitioner*, Apl., '86.



NOTES ON PRACTICAL PHARMACY.*

PLASTERS.

PLASTERS, *emplastra*, differ from ointments only by being of a more viscous or harder consistence. Wax, resins, gum-resins, and balsams, and fats boiled with oxide of lead, [or rubber, or similar substances] are usually their chief ingredients.

Plasters are dispensed either in bulk or spread on calf-skin, linen or taffeta, and other materials.

CERATES, *cerata*, are likewise plasters, which are of a harder consistence than ointments and softer than plasters, although some compositions are called cerates which contain a good deal of wax, and are harder and more brittle than plasters.

SPREAD PLASTERS, *sparadraps*, are woven materials, such as linen or taffeta, which are coated with a thin layer of plaster or some of the constituents of plasters. The latin name is formed from *spargere*, to spread, and the French *drap*, cloth.

The mode of preparation of plaster-mass and spread plasters, which are to be kept in stock, is a matter for the stock or manufacturing clerk (so-called *defectarius*). This being the case, only a few necessary directions will be here given for the preparation and spreading of such small quantities as the dispenser may be called upon to furnish.

The component parts of a plaster, following the rule which applies to all other mixtures, must be thoroughly mixed with one another so that a homogeneous mass may be obtained. Dry substances which do not become fluid at all, or do not liquefy at a temperature in which, for example, officinal lead plaster melts, such as leaves, barks, seeds, soaps, salts, Spanish flies, etc., should be pulverized or triturated to a fine powder before being mixed with the plaster-mass. This applies also to gum-resins, which are hard to melt or do not become entirely liquefied, such as *gamboge*, *myrrh*, *euphorbium*, and the resins such as *mastic*, *sandarac*, *benzoin*, *olibanum*, and *amber*.

Substances which, although hard, are easily melted, like *wax*, *spermaceti*, *resin*, *Burgundy pitch*, *paraffin*, *nutmeg butter*, *stearin*, *tallow*, etc., should be carefully melted, with continued stirring with a hot iron spatula, in a little pan provided with a handle, known as a PLASTER-PAN, or in an iron or brass plaster-mortar, the powdered and thoroughly mixed ingredients shaken into the melted mass, and incorporated with it by agitation. It is the more necessary to stir the melting substance when the operation is performed over an uncovered flame. As all fats, resins and plasters are poor conductors of heat, it may easily happen that they may ignite in some spots before the entire mass is melted. The use of great heat should be carefully avoided in all cases, and especially when aromatic substances enter into the composition of the plaster. All of the above-named substances except *resin* may be melted in a water-bath. If a steam apparatus for this purpose is at hand, its employment is preferable to the above.

The GUM RESINS, such as *ammoniac*,

* The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

galbanum, *asafoetida*, *sagapenum*, when they form the foundation of a plaster (by themselves, or with turpentine or vinegar, as the prescription may require) should be heated until they assume the consistency of a liniment. If these gum-resins are only to be mixed with a small quantity of a plaster-mass, they are to be triturated to a fine powder and mixed with the partially cold plaster-mass while it is still fluid; the same course should be adopted with volatile substance like camphor, ethereal oils, or balsam of Peru. *Camphor* should first be triturated with a little fatty oil, or dissolved in one of the fluid constituents of the plaster.

If a melted plaster-mass requires the addition of EXTRACTS of a soft consistence, they must first be mixed alone in a plaster-mortar with about one-third of their weight of turpentine, and united with the half-cold plaster by stirring. DRY EXTRACTS which cannot be converted into an impalpable powder, must, in order to attain the same result, be dissolved in water [or diluted alcohol, or alcohol] so as to form a barely fluid paste and mixed with the before mentioned portion of turpentine.

If *Emplastrum* or *Unguentum Hydragryri* is to be added to a melted

must remain longer in the hot water than the softer ones.

If they should both be put into the hot water at the same time, the latter would melt and run together before the former became soft. The kneading of the plaster is done either with the moistened hands or by means of a slightly-heated and moistened pestle in a plaster-mortar, a little brass mortar of the form and size of a pill-mortar, which is fitted with a handle by means of an iron ring which encircles it. If powdered ingredients, which are not dusty, are to be added to the mixture, it may be done by kneading, the powder (camphor, for instance) being strewn on the surface of the plaster, which is spread out flat, and the plaster being then rolled up like a sheet of paper, the roll compressed and the kneading continued. This process can be used advantageously only with very small plaster-masses. The mixing would be more perfect if it were done in a plaster-mortar with a hot pestle. If soft EXTRACTS are to be added to the mass, the mortar and pestle should be slightly heated, and the extract first mixed with a portion of the soft plaster containing the wax, which enters into the mixture at the same time.

The thoroughly-mixed and homogeneous mass, when free from any nodules of plaster, is then poured into little plaster-pots, or flat paper capsules, or rolled out into a cylinder. The plaster should be poured into the little plaster-pots only when it is of too soft a consistence to be rolled into cylinders. If, however, it contains additions which the melted plaster does not hold in solution, it is allowed to become cold, stirring meanwhile, and dispensed in the manner that salves are.

Mixtures containing wax, such as *Ceratum Labiale*, *Ceratum Picis Burgundæ*, are to be poured into paper capsules. Whenever it is possible, the plaster is given a cylindrical shape by being taken out of the mortar when nearly cold, kneaded, and then, having been moistened with water to prevent its adhering, it is rolled into a cylinder on the plaster-board. Oil is used in rolling plasters only when the mass contains much of extracts that are soluble in water, or other organic powders or substances which are either easily soluble in water or readily part with their soluble constituents in its presence. The plaster is then enveloped in paraffin or wax paper, and dispensed in wrappers of smooth white or colored paper, marked with the proper label, or else in long pasteboard plaster-boxes. Lead plaster should never be rolled out with oil.

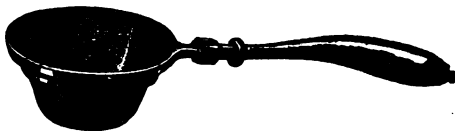
SPREADING PLASTERS.—The preparation of spread plasters requires skill and practice. Plasters are spread upon *linen*, *waxed linen*, *paper*, *paraffined paper*, *adhesive plaster*, *taffeta* or soft-tanned *sheep-skin* [also *plain muslin*, *twilled muslin*, *mole-skin*, etc.]. The plaster should be spread on the rough side of the soft-tanned leather and not on the smooth or grain side. Plasters are usually spread about as thick as ordinary packing paper.

Emplastrum Cantharidis, *Hyoscyami*, *Conii*, *Belladonnae*, and the like, are kneaded soft with the fingers, and then spread out by means of the moistened thumb of the hand, or the iron plaster-spatula on muslin or linen or leather, to the thickness of the back of a knife. A smooth upper surface may be given to the spread plaster by stroking and gently pressing it with a spatula that has been heated in the flame of alcohol.

PLASTERS SPRINKLED WITH CAMPHOR.



Small Copper Plaster-pan with Iron Handle.



Little Brass Plaster-pan for the Steam Apparatus.



Plaster-mortar.

plaster mass, the latter should be half cooled, and the use of a copper or brass mortar or plaster pan must be avoided, and a porcelain casserole employed.

The STRAINING of plaster-masses (through linen or gauze) is to be avoided as far as possible. Therefore, only such ingredients should be used as do not require straining. If, however, this operation is necessary, it should be performed only while the mass is still hot and fluid, and before any of the powdered ingredients are added.

A piece of gauze is always to be preferred to a strainer, since it is less prone to absorb the plaster-mass.

MIXING OF PLASTERS WITHOUT MELTING.—Most of the officinal plasters which are kept in stock, and especially those in the form of rolls, are composed of materials of such consistence that they become soft by being slightly heated, and may then be mixed with each other by kneading, so that it is not necessary to melt them entirely. They may be softened by being placed in a mortar or a flat glass vessel and covered with hot water. The water should not be so hot that the finger cannot be held in it for a moment. It should be carefully noted, however, that the harder plasters and those which melt with more difficulty,

—If the physician wishes the spread plaster to be sprinkled with camphor, the spread plaster is turned about over the flame of a petroleum lamp, so that its outer surface is half melted, and the camphor, which has been triturated to a fine powder with the aid of a few drops of alcohol, is at once strewn over the plaster very thinly and evenly, by means of a little sieve, and a quarter of an hour later the layer of camphor is pressed down on the surface of the plaster with a cold spatula.

The process is similar when any other sprinkling powder is employed.

Other plasters, such as *Emplastrum Saponis*, *Plumbi*, *Hydrargyri*, and the like, are to be softened in hot water; *Ceratum Cetacei*, *Emplastrum Opit*, must be melted, applied with a hot plaster-spatula, and spread. Should the softened plaster be very adhesive, the spatula is moistened with water when the spreading is performed.

The plaster should not be applied too hot, as in that case it would permeate the fabric.

The plaster should never be spread over the entire surface of the cloth or leather, but its margin should be left uncovered for about $\frac{1}{4}$ or $\frac{1}{2}$ inch.

PLASTER-FRAMES OR PLASTER-MOULD.

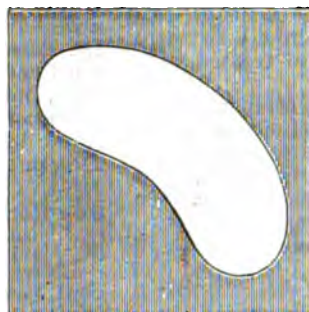
—By these terms we designate little round and four-cornered smooth frames of white metal. These frames are of no use in the preparation of large spread-plasters, but in making small ones, not only is the labor of spreading lessened by their use, but the plaster receives a smooth, sharp border and an attractive appearance, and the border of the cloth which has been left free is kept from being soiled. These little frames are kept in stock of sizes and shapes to correspond to the plasters that may be most in demand.



Quadrangular Plaster-Frame.



Round Plaster-Frame.



Frame for ear-plaster.



Plaster knife.



Plaster spreader.



Punch for Drouot's Ear Plaster.

If a plaster is to be surrounded with adhesive plaster, the plaster is either applied at once to spread adhesive plaster, leaving a margin of the latter about $\frac{1}{4}$ inch wide, or the adhesive plaster is rolled with moistened hands into long cylinders, of the thickness of pack-thread, which are laid around the border of the spread plaster, and pressed evenly with a moistened plaster spatula on to the spread plaster, and then flattened out. Ear plasters may be cut or punched out of the plaster by means of a punch or die, made of steel [or may be cut by hand].

PERFORATED OR POROUS PLASTERS are new forms of spread plasters, provided with numerous small holes. Such plasters are intended to offer no impediment to the perspiration. The holes may be made by hand by means of a suitable apparatus, as described by Archer, *Amer. Journ. Pharm.*, Ser. 4, Vol. 30, p. 171. The holes are from 2 to 3 mm. wide.

The instrument used for perforation is a cylindrical brass roller, $\frac{1}{4}$ inch long and $\frac{1}{4}$ inch thick, which revolves on a steel axis set in a steel fork, with a wooden handle about 10 inches long. The roller is fitted with 16 hollow steel

cones, which are set round in two alternate rows of $\frac{1}{4}$ inch each. Each cone is about $\frac{1}{4}$ inch long, with a small hollowed apex of half that length.

When the instrument is used, the handle is grasped in both hands, and the roller, being moistened with water,



Plaster perforator.

plaster himself. Germany and other European countries are already following our example in this respect, though not to the same extent.]

ADHESIVE PLASTER.—When large quantities of sticking plasters have to be kept on hand, they are generally spread in extensive laboratories by means of special apparatus, but this does not preclude their preparation in pharmacies, and there are even many pharmacists who possess special skill in spreading them with a plaster knife. The **PLASTER KNIFE** is a knife with a wooden handle and an obtuse blade of elastic steel about 13 Cm. long, and thinner towards the point, which is blunt or rounded. The cloth to be covered with the plaster is laid on a pad of smooth paper, and the adhesive plaster having been partly melted in a mortar to the consistence of a soft mass, it is spread with the plaster knife, which has been slightly warmed in an alcohol flame or Bunsen burner. If a little trouble and skill are bestowed on this process, his mode of sparadraping can be accomplished without blemish.

Some pharmacists prefer to use the "plaster spreader" for spreading plasters, which is shown in

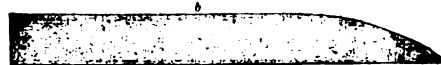
the cut [and of which various forms are in use]. By its peculiar shape, when the blade, which is covered with plaster, is laid down, it does not soil whatever it may rest upon, the wooden handle being so broad and heavy that it keeps the blade tilted up. The blade is about $4\frac{1}{2}$ inches long, of elastic steel, which is somewhat thinned towards its rounded end.

BOUGIES.

BOUGIES are smooth and firm cylinders, conical at one end, about 6 to 12 inches long, made of linen, catgut, cotton thread in bunches (like the

wicks of wax tapers), spread adhesive plaster, or rubber. They are of the thickness of a writing quill or a crow-quill. Linen bougies are made by cutting the linen into strips about 12 inches long and $1\frac{1}{4}$ to 2 inches wide, one edge being straight, and the other edge tapering to the point of the former in a curve. These strips are drawn through a mixture prepared from pure yellow wax, so that they are evenly saturated with it, and rolled on a marble slab, which is slightly heated, or on a hard, smooth, wooden board, beginning at the straight edge *a*, into firm cylinders, which are to be rolled several times in the same direction with a smooth piece of board, so as to make them as firm as possible. If they are not sufficiently smooth, or if the surface feels somewhat rough, they may be passed quickly through an alcohol flame [or Bunsen burner], care being had that the wax does not melt out from the linen.

[It is safe to say that spreading the ordinary popular plasters, or the perforating ("porousing") of plasters is but rarely practised by the pharmacist. In fact, the art of spreading plasters has passed into the hands of the manufacturer, who, with superior apparatus and skill, can undoubtedly produce much more handsome and uniform plasters than any person could turn out by hand. The material forming the base of the plaster is like-



wise of superior quality, not equalled by any compound directed by any pharmacopoeia. It is only when a plaster containing a definite amount of some active ingredient is wanted that the pharmacist, in this country, is likely to be called upon to prepare a

LEAD BOUGIES are prepared by mixing 75 grains of acetate of lead with $3\frac{1}{2}$ ounces of yellow wax, in a porcelain evaporating dish, heating it until the wax melts, and completing the mixing with a heated pestle. The above-described strips of fine linen are

then to be saturated with this mixture, and then having been freed from the superfluous mass adhering to them by scraping with a strong knitting needle, rolled into bougies. The use of a fine knitting needle facilitates the turning over of the margin of the linen, and also the rolling of the bougies. This should be withdrawn as soon as the process is finished.

SIMPLE BOUGIES are prepared from a mixture of $3\frac{1}{2}$ ounces yellow wax and 150 grains of olive oil, which mixture must be free from all moisture. The strips of linen, prepared as above described, are to be saturated with this mixture, laid on a heated glass plate, and a stout, hot knitting needle laid over them, between which and the glass disc they are to be drawn out so as to free them from any superfluous water, and then rolled up as before directed.

Bougies of catgut are prepared as follows: The catgut is extended between two hooks, and freed from fibres adhering to it, by rubbing with pumice and little linen rags, and then the heated wax mixture is painted on it by means of brushes. This is repeatedly applied to the stretched catgut which is kept in a perpendicular position, until it is covered with a layer of uniform thickness. Such uneven parts as appear may be scraped off with a pen-knife.

CANDLE WICKS, wound together, say in 2, 3, and 4 pieces, should be saturated, stretched out, and treated with wax in like manner.

These bougies having been supplanted by corresponding articles made of *vulcanized caoutchouc* are almost obsolete, and only rarely ordered by old surgeons. [On Raynal's bougies, see elsewhere in this number.]

(To be continued.)

Tests for the Purity of Cocaine.

AMONG the tests for the purity of cocaine hydrochlorate drawn up by the Pharmacopœia Committee of the German Pharmaceutical Association, there is the requirement that the salt should volatilize completely when heated on platinum foil, and dissolve clear and colorless in water and in concentrated sulphuric acid. In criticising this latter test, Mr. Beckurts points out (*Pharm. Centralhalle*, March 25th, p. 140) that although adherent extraneous impurities would be indicated by coloration in contact with the acid, this would not be the case with decomposition products of the alkaloid itself. Moreover, the coloration would sometimes depend upon the relative proportion of the salt dissolved in the acid. Giesel's test, dependent on the formation of a violet-red precipitate with solution of potassium permanganate, without the reduction of the permanganate, he considers to be open to the same objection, since the permanganate is not reduced directly by the decomposition products of the alkaloid. He would therefore require, in addition, that the salt should be perfectly neutral, so that a small quantity, placed on moistened blue litmus paper, should give no indication of acidity. The tests for purity of cocaine hydrochlorate, in Herr Beckurts's opinion, should be that it should dissolve clear and colorless in water, volatilize completely from platinum foil, give a colorless solution with pure concentrated sulphuric acid in the proportion of one centigramme to 0.5 C.c., and that a concentrated aqueous solution should be absolutely neutral, and not at once reduce potassium permanganate, and when heated with an excess of this salt, give off no odor of oil of bitter almonds. As additional tests for the identification of cocaine, Herr Beckurts recommends to heat a little of the alkaloid with alcoholic potash, when the characteristic odor of benzoic ether should be given off, or the addition of

a little perchloride of iron to a solution of the alkaloid in sulphuric acid, which should give rise to a yellow turbidity that disappears on warming.—*Pharm. Journ.*, May 1st.

[Note.—Mr. Beckurts's statement that permanganate of potassium is not reduced by the decomposition products of cocaine requires further proof; indeed, so far as we have practised the test, we think that it is reduced by them. But as we did not pay very special attention to the cause of the reduction, being satisfied with the fact that there was a reduction in one case and none in another, we must leave this point open for the present.—ED. AM. DRUGG.]

Cocaine known in 1857.

It is generally supposed that Niemann, a German chemist, was the first to discover cocaine, having isolated it as early as 1859. Dr. Clemente Torretti, late professor of chemistry and pharmacology at the University of La Paz (Bolivia), now writes to a South American journal that he has found irrefutable proofs, showing that in 1857 a Mr. Enrique Pizzi, his (Dr. Torretti's) predecessor in La Paz, succeeded in isolating the alkaloid of the coca-leaf, having been encouraged to make experiments on the coca leaves by Mr. Tschudi, the celebrated Austrian explorer, and Dr. Aquila Ried, a well-known personage in Valparaiso. Dr. Torretti adds that his assertion is not founded on documentary evidence only, but that he has actually found specimens of the cocaine manufactured by Pizzi in 1857.—*Chem. and Drugg.*

The Removal of Tannin from Sherry and other Wines.

It seems now to be an accepted fact that the cause of the precipitate in ipecacuanha wine [of the *Brit. Pharm.*, which is prepared by macerating powdered ipecac in acetic acid, percolating, evaporating percolate to dryness, and macerating the dry extract in sherry wine], is the tannin contained in the sherry. This had long been conjectured, but has not till lately received the prominence it deserved. Experience has clearly proved that ipecacuanha wine made by the new process does still deposit, unless the wine has previously been freed from tannin, and it is equally true that ipecacuanha wine keeps perfectly clear and bright for months, provided this precaution be carefully observed. The same line of remark holds true with reference to quinine wine. Some samples of this popular medicine invariably showed a muddy, unsightly deposit, whereas others remained comparatively clear, the difference being entirely due to the greater or less content of tannin in the orange wine. Some firms advertise orange wine "free from tannin," but I generally find that this statement has to be received as indicating what the wine ought to be, rather than what it is.

It may not, therefore, be out of place to give a method for the separation of the tannin from the wine, which is so simple that any pharmacist may carry it out. I have tried various plans, but the best is the expedient of putting a quantity of isinglass amongst the wine some time before it is required for use. The isinglass must not be in a state of solution, as it is impossible to get the compound that is formed coagulated without the addition of salts that would injuriously affect the wine, and, moreover, the solution has the effect of diluting the wine.

The isinglass must not be too fine or too coarse. In the first case, I find that a certain proportion of the isinglass seems to be dissolved by the wine before the tannin has had time to deposit, and, in the second, suffi-

cient surface may not be obtained without the use of quite an unnecessary quantity of isinglass. After various trials, I find most satisfactory results are arrived at by using isinglass, such as Swinborne's "extra quality," which is neither very fine nor very coarse. The proportion employed is one ounce isinglass to half a gallon of sherry or orange wine, and my practice is to set aside this quantity immediately after a lot has been made, and by the time it is required, which may be in a few weeks, or sometimes days, as the case may be, the wine is so far free from tannin. It takes a long time to remove the last traces of tannin, and this, indeed, I have not been able to accomplish; but by the end of a month, the color of the tannate of isinglass (or "leather," as we might call it) is of a dark brown to a shade approaching black, according to the proportion, less or more, of tannin in the wine.

By the use of these detannated menstrua, ipecacuanha and quinine wines may both be prepared, with every confidence that the result will be satisfactory. Let me add that my opinion of the value of the new process for preparing the former has received ample confirmation, as may be gathered from the fact that five drops of wine, which was at least two months old, have had on more than one occasion a strong emetic effect even on adults.—THOMAS MABEN in *Chem. and Drugg.*

The Abuse of Phosphorus in Sal Medication.

WITHIN the past decade, the medicinal use of phosphorus by the public without proper medical advice has increased enormously, in spite of warnings as to the dangers attendant upon the continued use of this patent "energator." At the last meeting of the Clinical Society of London (*British Medical Journal*, p. 545), Mr. Hutchinson read notes of a case which well illustrates the dangers of self-medication. An old lady (65) had for two years taken three of Kirby's one thirty-third grain phosphorus pills daily and "quite renovated her brain thereby;" but meanwhile necrosis of the lower jaw set in to such an extent that "bare discolored bone was disclosed in the mouth the whole length of the alveolus." This necessitated the removal of four inches of dead bone. The patient made a good recovery. This is a wholesome warning to the phosphorus-taking public, and is a powerful argument in favor of the sale of such medicines by those only who are cognizant of their properties.—*Chem. and Drugg.*

Preparation of Pure Hydrobromic Acid.

PROF. J. S. STAS, being engaged in a new determination of the atomic weights of silver, potassium, and sodium, derived from their relations to bromine, required for this purpose a hydrobromic acid absolutely free from chlorine and iodine.

He first dissolved the bromine in bromide of potassium, added oxide of zinc to the solution and distilled the mixture. Any chlorine that may have been present in the bromine will remain behind as chloride of potassium, any iodine present will combine with the oxide of zinc, and pure bromine will distill over. Hydrobromic acid is then prepared from this in the usual manner, by acting with the bromine upon red phosphorus in the presence of water.—*Zeitsch. f. Anal Chem.*, 1886, 213.

Balsam of Copaiha is recently mentioned as an excellent application for burns.

A NEW HOT-AIR DRYING OVEN.

FOR drying substances in a current of air, deprived of moisture, and at the temperature of boiling water, the apparatus here illustrated is recommended by Dr. Rud. Rempel. It has a height of 17½ inches, and a diameter of 6 inches. It consists of a reservoir A, charged with lumps of chloride of calcium for drying the air passing through the apparatus. This reservoir is attached to a double-walled cylinder E containing water which is heated by a circular burner b. The air which ascends through the lower orifice H and the chloride of calcium, passes in a dry condition through the narrow tubes k into the interior of the drying oven, and finally escapes through openings in the top. The products of the combustion of the gas pass off through 4 equidistant channels a. The steam of the boiling water escapes at f, and the presence of water in the upper chamber may be ascertained by means of the stop-cock p.

[If this stop-cock were turned upwards, and connected with a glass tube open on top—the stop-cock being kept open all the time—the arrangement would serve as a water-gauge.—ED. AM. DR.] When the apparatus is started, the chamber A is charged with fused chloride of calcium, the rubber stopper at H is loosened sufficiently to permit the entrance of air and the gradual escape of the melted or liquefied chloride of calcium into a vessel placed below. If necessary, a fresh supply of chloride of calcium may be introduced through G. The interior of the drying oven contains a framework of shelves which may be lifted out. When the substances to be dried, which are best contained in watch-glasses of about 2½ inches diameter, are thoroughly dry, the whole frame is lifted out, the watch-glasses transferred to a desiccator, and afterwards weighed between ground watch glasses or other contrivances that will prevent the access of moisture.—After Chem. Zeit.

Francisceine.

FRANCISCINE is the name proposed for an alkaloid recently discovered in the manaca root of Brazil (*Franciscea uniflora*) and other species. It is powerfully purgative and diuretic and also has diaphoretic and emmenagogue properties.—*Lancet*.

Olea Cocta.

THE so-called *infused oils* of the German and other continental pharmacopœias are usually directed to be prepared by macerating the cut herb (*hyoscyamus*, *stramonium*, etc.) with alcohol, and then digesting with olive oil. Eugen Dieterich recommends an improvement, by employing the herb in a powdered condition. This enables the operator to confine the vegetable substance to a smaller space, and to extract it with the oil in two separate portions, whereby a much deeper colored product is obtained.

Oleum Hyoscyami

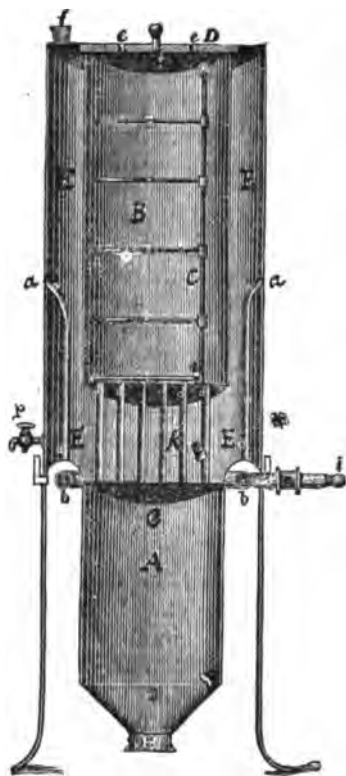
is directed to be prepared as follows:

Hyoscyamus, powdered... 100 parts.
Alcohol 75 "
Olive Oil 1,000 "

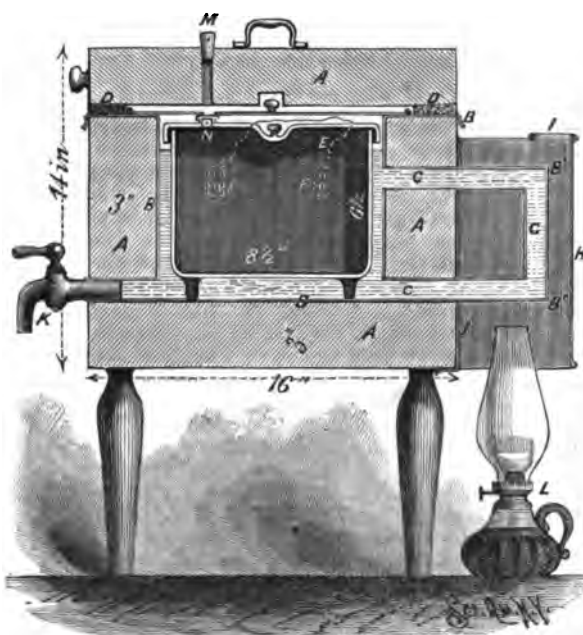
Mix the hyoscyamus with the alcohol, introduce the damp mixture into a stone-vessel of suitable capacity, close it, and set it aside for twenty-four hours. Then add 600 parts of olive oil, digest, under frequent agitation, during ten to twelve hours, at a temperature of 60°–70° C. (140°–158° F.), and express strongly. To the residue add 400 parts of olive oil, digest in the

same manner, express, and add to the first portion.

The yield amounts to about 920 parts. [Note of ED. AM. DR.—Infused oils have been repeatedly examined for the quantity of active constituents they contain, though at no time with any degree of accuracy (compare Dragendorff, "Die chemische Werthbestimmung einiger starkwirkender Drogen." 8vo, St. Petersburg, 1874, p. 35). But with the improved methods of separation of alkaloids at present available, a much more accurate esti-



Rempel's drying oven.



Atkinson's oven.

mate of their therapeutic value might be obtained. It is suggested that some one select this subject as a theme for investigation.]

Spanish Pharmacy is reported to be on the downward path. Spanish pharmaceutical papers complain bitterly of hard times among the trade. Shop after shop is being closed, and in some houses the receipts have fallen to one-fourth of what they were a short time ago. The decline in legitimate pharmacy is ascribed principally to the establishment of military pharmacies, and to the increase of quackery and the sale of nostrums.

A USEFUL OVEN.

THE *Scientific American* describes a simple and inexpensive contrivance invented by Mr. Edward Atkinson, and called the "Aladdin Cooker," which is recommended for the cooking of food, but which might be made of much use in a pharmaceutical laboratory as a drying oven or hot chamber. By adding salt to the water a higher degree of heat might be attained than when simple water is used. The description given is as follows:

A, box of pine wood, 1½ to 3 inches thick, according to size of cooker; B, lining of tin or tinned copper, fitted with arm B' of copper, through which the water, D, circulates, and in which it is heated by the lamp, L; the cooking vessel, which may be of metal, preferably of porcelain or of glass; D, D, felt lining to cover; E, cord attached to perforated ears or ring, F, F; G, G, G, water in circulation, heated by lamp, L, to about 200° F.; H, hood of tin about the arm B' to concentrate the heat upon it; I, nut to tin hood for draught; J, tin guard to keep hear from wood; K, faucet for drawing off water; L, lamp with wick ½ to 1 inch wide, according to size of cooker; M, orifice for thermometer; N, orifice to cooking vessel with screw cap, for thermometer; B' B', arm 3 inches by 1 inch deep. Rounded corners are desirable inside for facilitating cleanliness. Begin with tepid or cold water, if glass vessels are made use of.

Atropinum Santonicum.

A COMPOUND of atropine and santonic acid is recommended by Herr Bombelon (*Pharm. Zeitung*, April 14th, p. 280) as presenting advantages over any other salt of atropine for ophthalmic purposes, a solution of it being perfectly non-irritating, and not liable to fungoid growth. The action is said to be mild and resemble that of homatropine. The mydriatic action equals that of atropine sulphate; one drop of a solution of 0.01 gramme in 20 grammes of water is sufficient to dilate the pupil, the dilatation disappearing in from twelve to twenty-four hours. Atropinum santonicum is described as a white, amorphous, non-hygroscopic powder. A dilute solution may be prepared with cold water; a stronger solution requires the aid of a little heat. It is recommended that the solution be preserved in yellow-glass bottles, to avoid the formation of photosantonic acid under the influence of light, though it is not yet known whether this change would be prejudicial.—*Pharm. Journ.*

[We do not yet know whether the compound above spoken of is the santionate or the santoninate of atropine, the two acids, santonic and santonicin, being different in properties.—ED. AM. DRUGG.]

Terebene.—As to the value of terebene, there is a remarkable and amusing testimony, communicated to the *Brit. Med. Journal* by Dr. Calvin G. Campbell. He had recommended it as a *disinfectant*, and got the following letter from the patient's sister shortly after:

"Don't you think that you should have cautioned my parents as to the increase in their butcher's bill when you told us to try terebene? My sister took double the quantity of food. Nurse said: 'Since you have used that stuff, I eat as much at one meal as I used to eat in a day, and quite enjoy it.' It must have some magical effect."—*Chem. and Drugg.*

The Government Plantations in British India.

It had been announced by the British Government some years ago that it was not its intention to keep up the cultivation of cinchona trees longer than was necessary to firmly establish the industry, so that it might thereafter be left in private hands. As there was no evidence that the Government made any preparations to abandon the enterprise or to contract the area of Government plantations, Mr. L. McIver, of the British House of Commons, recently asked Government whether any steps had been taken to abandon the enterprise to private industry.

To this inquiry the following answer was made by Mr. U. Kay-Shuttleworth, the Under Secretary of State for India:

I can answer my honored friend's questions, only reminding him that the Duke of Argyll, in a dispatch to the Government of Madras of the same date as that which he quotes, wrote: "It is clearly necessary that the Government should retain the plantations in their own hands for the present. The time has not, therefore, arrived for finally deciding upon the question of their retention or eventual sale. As at present informed, however, I incline to the opinion that a portion of the plantations, with the manufactory, should remain permanently under Government superintendence." Though it has never been the intention of the Indian Government to continue permanently in the bark trade, the time for withdrawing from it has been deferred during scientific investigations on the subject of the production of a cheap febrifuge.—*Chem. and Drugg.*

Commercial Sulphate of Quinine.

In our last issue (page 91), we gave an account of the results obtained by Prof. E. de Vrij, in his examination of commercial sulphate of quinine, nearly all of which he found largely contaminated with cinchonidine. At the same time, we gave an abstract of Mr. Cownley's criticisms, which appeared to contradict de Vrij's results in many respects.

Dr. de Vrij has, since then, replied to these criticisms in a paper published in the *Chem. and Drugg.* of May 1st. In this, he points out that, according to experiments formerly published by him, Hesse's test—upon which the results of other experimenters was based—did not suffice to prove the absence of cinchonidine, unless the reacting liquids were left in contact for a much longer time than two hours. We published this test and criticisms, made by various experimenters at that time (*New Rem.*, 1879, 139, 179, etc.). We will only briefly repeat the outlines of Hesse's process here:

"Introduce 0.5 Gm. of sulphate of quinine into a test-tube containing 10 C.c. of hot water (between 122° and 140° F.), and shake well repeatedly. After the lapse of ten minutes, filter the cooled liquid into a special tube [called "quinometer," about $\frac{1}{4}$ inch in diameter and about 5 inches long; having two graduation marks, the lower one corresponding to 5 C.c., and the next one to an additional C.c.] until the filtrate reaches the first mark (at 5 C.c.). Then add 1 C.c. of ether, and finally 5 drops of water of ammonia. Close the quinometer with a cork, shake gently a few times, and set it aside for two hours. At the end of this time, the ethereal solution floating on top must be found free from crystals when examined with a loupe."

De Vrij showed afterwards, that when the tubes were set aside for twelve or fourteen days, even such samples as had appeared to be per-

fectly pure under Hesse's original test, showed a copious separation of crystals, due to cinchonidine chiefly.

Partly basing on this modified method of Hesse, and upon other processes of separation (as tartrate), as well as upon the optical behavior of the samples examined, he now publishes a new series of results which would seem to justify him in adhering to his former statements.

He examined 2 new samples of English manufacture, 2 Dutch, 5 German, and 3 French samples. Unfortunately, he appeared not to have had any American samples at his disposal; hence we have no chance to make any comparison as to their constitution—when tested by the same methods. The results are as follows:

	Sulphate quinine.	Sulphate cinchonidine.	Water of crystallization.	Total.
English, I.	84.769	9.508	5.723	100.
II.	82.208	6.942	10.850	"
Dutch, I.	77.931	8.355	13.714	"
II.*	87.575	0.000	12.425	"
German, I.	77.428	4.730	17.842	"
II.	78.932	5.730	15.338	"
III.	78.617	5.676	15.707	"
IV.	76.666	8.180	15.154	"
V.	80.758	6.816	12.426	"
French, I.	82.597	5.954	11.449	"
II.	76.282	9.072	14.646	"
III.	78.790	12.448	18.762	"

The new statements published by Dr. de Vrij will undoubtedly lead to a further discussion of the merits of the several processes. It would be highly desirable that the examination should be extended—by all experimenters—to every brand of sulphate of quinine manufactured in Europe and in this country.

Cinchona Cultivation in Ceylon and Java.

THE cultivation of cinchona in India and Ceylon has led to such considerable changes in the bark market that any information bearing upon the prospects of the new sources of supply has an especial interest at the present time. A late number of the *Ceylon Observer* publishes a report of the opinions formed in this respect with regard to Ceylon by Mr. Mundt, the president of the Java Planters' Association, who has been making a tour through Ceylon and India, with the especial object of comparing the work carried on there and in Java. Mr. Mundt thinks that the Ceylon planters have not mastered the requirements and habits of the cinchonas, and he says that he has seen very little that is really well planted, everything being done with the idea of getting returns as quickly as possible, rather than with a view to permanent results. He thinks that though the elevation of most Ceylon estates is too great for Ledgeriana, a bastard of this variety, a hybrid of it and the succirubra, should do well on good ground, but not on the deep slopes now planted with officinalis and succirubra. In his opinion a very large proportion of the cinchona planted on the higher estates will die out in the course of a few years, since the ground is too steep and the soil not sufficiently deep. The conditions in Java are considered to be more favorable as regards future pros-

* This exceptionally pure sulphate of quinine was prepared, at Dr. de Vrij's request, at the Amsterdam Quinine Works, from the bisulphate. Bisulphate of quinine is always free from cinchonidine; hence when an absolutely pure quinine salt is needed, either medicinally, or to prepare pure quinine and quinine sulphate from, the bisulphate should be chosen.

pects. No bark is there taken until the trees are seven years old, and the system of grafting true ledger on succirubra stems is found to be very successful. There is a very large extent of ground planted with cinchona capable of yielding bark with ten and eleven per cent of quinine sulphate, and Mr. Mundt thinks that when this comes into the market Ceylon planters will suffer. There are few estates in Java where they have begun to shave the trees, nearly all the bark sent away hitherto being from coppiced trees, and he anticipates that when the Java planters begin to shave, they will put on the market millions of pounds of bark far richer in quinine than can be produced in Ceylon. On the other hand, the absence of roads and railways in Java places that island at a disadvantage as compared with Ceylon, where the development of an extended railway system has provided great facilities for the transport of produce. In other respects the possibilities of extending the cultivation of cinchona in Java appear, however, to be very considerable, and Mr. Mundt speaks of millions of acres that would be available for that purpose if there were roads and railways in the district and the rate of transport was less exorbitant than it is; on this point he thinks Java can well take a lesson from Ceylon. But it must be remembered that there is another point also to be considered, namely, the market to be obtained for the bark, and in regard to this the editor of the *Ceylon Observer* expresses his opinion that the cultivation of cinchona on half a million acres would have the effect of swamping the world and ruining the enterprise.—*Pharm. Journ.*, May 1st.

Arekaine.

AREKAINE, reported to be a constituent of betel-nut, is a colorless, volatile oily alkaloid, smelling like weak meat broth, and having a strong alkaline reaction, resembles nicotine. It causes increased salivation, retards the pulse and causes purgation.

Thalline.

DR. BRITNEFF experimented with thalline in 15 cases of pneumonia, tuberculosis, and typhus, and found that, although it is an active antipyretic, its effects are of short duration, the temperature rising soon with vigor.—*Lancet*.

Lanolin.

THE following tests for the purity of lanolin are given by Dr. Oscar Liebreich:

1. A small quantity, on being heated in water over a water-bath, must show the absence of glycerin.
2. If a solution of caustic soda be added, ammonia must not be developed.
3. If a small amount be heated with water on a water-bath, the fat must separate in oily drops without producing an emulsion. If the quantity employed be large, it must separate as a clear oil.
4. With litmus-paper the reaction must not be acid.
5. When well mixed with water upon a ground-glass plate with an iron spatula, the product must contain over 100% of water and the mass be sticky and paste-like, adhering to the spatula; if impure, the mass will have a soap-like smoothness from which the spatula readily glides.
6. On exposure, the surface of lanolin and lanolin-salves become darkened, owing to escape of water and not to decomposition.
7. It never becomes rancid and its odor should remind one of wool.—*Br. Med. Jour.*

ADAMS' PAPER COILS.

SOME time ago, a new method of estimating water and fat in milk was published by Adams, and this has been found so reliable and practical that it is at present in extensive use. Since it is applicable, not only to milk, but to many other determinations where a certain constituent of a mixture has to be extracted with a volatile solvent, it deserves to become more generally known. Its chief feature is a small coil of narrow, rather stout filtering-paper, completely deprived of any substance soluble in moderately dilute acids, as well as of all traces of fat. A sample of the milk to be tested is poured on the upper edge of the coil, and the weight of the latter, in a dry condition, having previously been ascertained, it is only necessary to dry it to a constant weight, in order to find the percentage of water. By extracting it then with ether, and again weighing, the loss will indicate the amount of fat.

Although the process has not been very long in use, it has found so many supporters that it may be considered as being firmly established. It was not to be expected, however, that it was not capable of improvement, and the following abstract of a paper (in *The Analyst*, April, 1886) by A. H. Allen and W. Chattaway points out how such improvement can be made:

The authors say:

"We roll up with the paper a piece of string previously boiled with water containing a little sodium carbonate (in order to remove size, etc.), which serves to keep the concentric folds of the coil from contact with each other. We also tie on to the lower end of the coil a piece of filter-paper about $3\frac{1}{4}$ inches in diameter. This is made of thinner paper than the coil itself, and is pleated round the sides of the coil, somewhat after the manner in which a dispenser fold the cap of the cork of a bottle of medicine. This device provides the coil with a bottom, and enables us to deliver 5 C.c. of milk as fast as it will run from the measuring pipette on to the upper end of the coil, which should, meanwhile, be suspended from a suitable support. In this manner the necessity of weighing the milk absorbed by the coil is wholly avoided.

As the novelty attaching to our mode of operating really lies in the construction of the paper coil, it is desirable to describe the method of making it in more detail.

The strip of paper we employ is of the same dimensions and quality as that used by Mr. Adams; but each concentric ring of paper in the coil is kept equidistant from the next by means of a piece of string, which is threaded down either side of the paper, about half an inch from the edge, as shown in the accompanying sketch. It will be seen that there is a loop, formed by knotting the doubled string, which loop protrudes from the centre of the coil when finished, and is useful for hanging it up while being charged with milk, and during the subsequent process of drying.

A small glass rod (or other suitable article) is used to roll the paper upon, the rolling being commenced at the loop-end of the strip. When the coil has been rolled as far as the last holes in the paper (BB), the two ends of the string are tied in a knot as close to the paper as possible. A hole is then made through the centre of the paper, immediately under the knot, and of sufficient size to allow the knot to go through. The winding of the remaining three inches of the paper is then completed, and a pleated cap of filtering paper placed over the bottom of the coil. A hole is made through this cap at the side, just where the knot occurs. The ends of the string are threaded through this hole, and the cap and

coil are then secured by merely tying the two ends of the string round the cap. The finished coil has a diameter of $\frac{1}{4}$ inch, and can then be extracted with ether in the usual way, to remove traces of resin, etc.

The advantages we claim for the coils made in the foregoing manner, specimens of which we produce, are as follows:

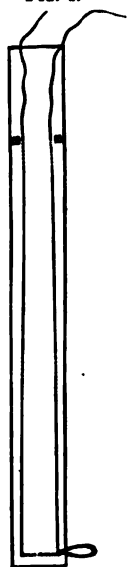
The concentric folds of paper being kept separate by the string, the full extent of surface is exposed, and the process of drying is correspondingly facilitated.

The cap of filter paper at the bottom, aided by the obstruction produced by the string, renders it possible to pour the milk at once on to the open end of the coil while it is suspended by the loop of string.

No loss by filtration of the milk through the cap has ever occurred to us. This fact enables us to dispense with the two weighings which militate so powerfully against the general adoption of the original mode of operation. With the modified coils, 5 C.c. of the milk can be taken up in a pipette and at once run on to the suspended coil. The density having been previously observed, the weight employed is, of course, accurately known.

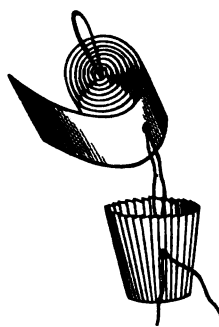
Although in general, and when operating on fresh milk, we consider the

Fig. 1.



Adams' paper coil.

Fig. 2.



use of a definite measure of the sample has marked advantages, the use of a known weight of milk is equally simple.

The amount to be taken can be weighed in a tared tub or small beaker, poured on to the coil, and the vessel rinsed out with a few drops of water, which, in their turn, are added to the coil. The last plan is equally available for sour milk, a weighed quantity of which may at once be poured on the centre of the coil—the modified plan having a marked advantage in this respect over the coil as originally constructed. If it be considered desirable to employ ammonia, its addition to the weighed quantity of milk, before pouring on to the coil, presents no difficulty.

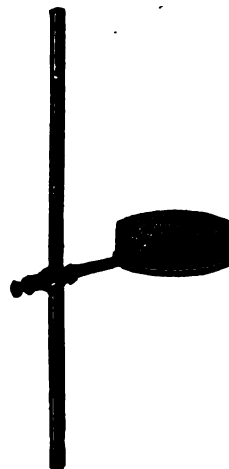
A number of coils being charged with milk, they can be conveniently hung on rows of pins in a vertical Stone's box, or similar receptacle, and can be kept there for an indefinite period.

Lobeline.

DR. V. ROSEN recognizes two alkaloids in *Lobelia nicotianæfolia*, one liquid, corresponding to the lobeline obtained from *L. inflata*, the other solid, crystalline, and soluble in chloroform. The second has also been discovered in *L. inflata*. The solid alkaloid and the hydrochlorate and sulphate of lobeline, correspond in their pharmacological characteristics and resemble apomorphia in their power to cause vomiting.—*Lancet*.

PROTECTION FOR FLASKS DURING HEATING.

DR. F. W. DAFERT recommends to use a small, disc-shaped frame of wire-gauze as a protection to flasks which are to be heated over a naked flame, and which contain liquids which are liable to bump and thereby cause the flask to break when it is set on the iron ring of the retort stand



direct. The frame consists merely of a ring of wire-gauze set on edge upon the retort-ring, and fastened there by wire. This wire-cylinder serves also as a useful protection against moderate drafts that might affect the flame burning under the flask.—*Chem. Zeit.*

Helenin.

HELENIN is recommended by Dr. J. B. Obiol as a local application in diphtheria. When pure, it should be perfectly white and flocculent, like the sulphate of quinine, with aromatic odor and bitter aromatic taste; insoluble in water (to which it should impart no opalescence); very soluble in alcohol and especially soluble in ether, the solutions being clear, colorless, and without sediment. $2\frac{1}{2}$ is soluble in oil of sweet almonds. Impure specimens are apt to be granular, heavy, yellowish, only slightly bitter, with resinous odor, and they sometimes render water opalescent and deposit a precipitate from solutions in alcohol or ether. Another substance sometimes sold for helenin, said to be a derivative of shalin, and not possessed of the antiseptic properties of helenin, is crystalline; only slightly soluble in alcohol or ether, and not at all in oil of sweet almonds.

Obiol first applies powdered camphor with the end of a finger to the diphtheritic process and then paints the surface with a solution of helenin in almond oil. This is at first repeated every four hours and quickly destroys the false membrane. It can be given internally in doses of $1\frac{1}{4}$ grains to children six years of age. The remedy sometimes causes constipation.—*Lancet*, Apl. 10th.

Poisoning by Vaseline.

AN English physician reports in the *British Medical Journal* two cases in which symptoms of poisoning followed the administration of half-teaspoonfuls of vaseline on sugar as a remedy for sore throat.

In a subsequent number of the same journal, another physician narrates his experience in the administration of vaseline in large doses to cholera patients in India, and expresses an opinion that it produced no effect whatever—either good or bad.

Benzoate of Sodium is recommended by Sulman and Berry as preferable to other food preservatives, owing to the fact that it is tasteless when pure; is a third more powerful than boric acid, and is innocuous when taken in small quantities for prolonged periods.—*Lancet*, Apl. 10th.

THE
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EDITORIAL.

THE April number of *The Druggists' Circular* stated that Drs. A. L. Loomis and F. R. S. Drake recently "instituted actions for \$10,000 damages against C. N. Crittenton, as the agent for Kaskine," for libel in circulating the pamphlet advertisement of that nostrum, containing the allegations that they had reported favorably on its medicinal effects. Mr. Crittenton was made defendant because, while for circulating the libel, he was equally liable at law with the originators of it, he seemed to be, at the date the actions were commenced, the only person able to respond in damages. Efforts of attorney of the plaintiffs to find the "Kaskine Company" had been ineffectual, and it was presumed that Mr. Crittenton was not only the agent of the nostrum, but also its principal owner. A letter written to him by Dr. Loomis having failed to reach him personally, the actions were begun. Upon learning the actual state of affairs, in that both Drs. Loomis and Drake positively denied the truth of the statements of the pamphlet as to themselves, Mr. Crittenton signified his regret that statements circulated, without suspicion, by his house in ordinary course of business, like many other advertisements, should have placed him in the position of one circulating a libel, and upon his assurance that he had no interest in Kaskine beyond commission in sales, that the contents of the advertisement had never been brought to his personal

knowledge, and that the circulars should be destroyed and no more of like nature distributed by his house, both the plaintiffs discontinued, on the payments of costs, actions which they had commenced, not on account of any personal rancor toward Mr. Crittenton, but for the sake of vindicating their professional reputations.

It is understood that the present head of the Kaskine Company has assumed his position, and indeed that the Company has been incorporated since the circular containing the misstatements as to Drs. Loomis and Drake were printed, and that the corporation has not circulated, up to the present time, any advertisements containing the names of these gentlemen. The prompt disavowal of Mr. Crittenton, on learning of the libellous nature of the advertisement, was felt by the plaintiffs to be all that could be reasonably asked of him, although they were advised that, technically, his ignorance or knowledge of the acts of his agents did not free him from legal responsibility, while it enabled them to show the falsity of the libellous statements in an action against a defendant of business standing and ability to respond in costs and damages. By instituting proceedings against such a defendant they vindicated themselves and signified their readiness to disprove in it the allegations of the owners of Kaskine, but they felt it would not be equitable, in view of the gentlemanly and reasonable explanation of his position, to subject Mr. C. to the large expense of defending the actions.

In this condition, the matter rests for the present. It is of interest to druggists as pointing out a liability that may be innocently incurred where, even without the knowledge of a proprietor, his agents circulate papers containing misstatements of a nature, if true, to injure in professional reputation the persons about whom they are made; and there can be little doubt, in view of the system of ethics adopted by all physicians, that to charge reputable physicians with recommending to the public proprietary remedies constitutes, if the charge be false, a libel in an action founded on which special damages need not be proved.

IT is known to those who have practical experience in the manufacture of cocaine that different lots of coca contain different *relative* percentages of the crystallizable alkaloid cocaine and of an amorphous alkaloid accompanying the former. There are even some lots of coca in which the latter is entirely absent. Now it would be an interesting problem to discover the relationship existing between the crystalline and the amorphous alkaloid; also, whether the latter is a separate individual or a mixture of several, and whether it is naturally existing in the leaf, or a product due to the process of manufacture. The fact that there are two varieties of cocaine—one crystallizable, the other amorphous (assum-

ing, for the present, that this is merely a variety of cocaine)—has been recognized for some time, but no special attention was drawn to the difference between the two, until Giesel's test was published (see our last, and the previous number).

There is no doubt whatever that a pure crystallized cocaine, or any of its salts, is only very slowly affected by permanganate of potassium, no other alkaloid showing the same behavior. On the other hand, the amorphous cocaine reduces the permanganate more or less rapidly. Here our present knowledge ceases, for we know practically nothing as yet about the nature of this "amorphous base." Whether it bears the same relation to cocaine as the amorphous and "inverted" alkaloids in cinchona bark do to the crystallizable ones, or as hyocine does to hyoscyamine, etc., is a question to be decided hereafter. For the present we are interested only so far as the therapeutic effects of the two varieties of cocaine are concerned. And here we must state that we have not yet learned of any observed differences. Probably the most competent observers, and those who used cocaine and its salts most frequently, never knew that there were modifications of the alkaloid, and therefore paid no particular attention to the *kind* of cocaine they used. It is possible that a difference in potency or in kind of action will hereafter be observed, but so far we do not remember having heard of any that could be ascribed to the fact that there is a crystallizable and an amorphous base.

While the permanganate test, therefore, enables us to prove the freedom of a sample of cocaine from the amorphous bases, it does not follow, *eo ipso*, that the samples which did not stand the test were less effective, physiologically or therapeutically, than the crystalline. It will, however, be conceded that when we have the choice of two varieties of a substance—of about equal activity—and one of them can be obtained in a crystalline condition, while the other cannot, that it is the wiser plan to select the former as giving more guaranties for its purity.

The crystallized hydrochlorate of cocaine, $C_{17}H_{21}NO \cdot HCl \cdot 2H_2O = 375.4$ contains 9.59 per cent of water of crystallization, when crystallized from an aqueous solution. It forms anhydrous crystals, as we learn from a recent European report, when crystallized from alcohol. The new British Pharmacopoeia gives the formula of the salt without the water of crystallization, and therefore conveyed the impression that it required the salt to be furnished in an anhydrous condition. In fact, Howard and others were in the habit of supplying it anhydrous, though they also made the crystals. Now if a cocaine salt, which has crystallized with water, is dried and rendered anhydrous, it will be practically the same thing as the same salt crystallized anhydrous from alcohol (supposing this were possible in every case). Such a desiccated crystallized salt has been in considerable demand, because it has been regarded by many

as a more definite and uniform starting-point for making solutions of a known strength, than a crystalline salt in which the water of crystallization might vary from various causes.

When cocaine was first introduced, it was an unfortunate choice to select the hydrochlorate as the soluble salt to be put into the hands of the profession. Had the hydrobromate been selected, it would have been far preferable, since this salt crystallizes with the greatest ease, and often in very long crystals. The kind of acid combined with the cocaine, in the small quantity used at any one time, is entirely immaterial, as it is not likely to modify the effect of the base in the least.

WE have before spoken of the value that hydrochlorate of cocaine has as a preventive of seasickness, and now add that a pharmacist of our acquaintance who suffers from nausea and giddiness whenever he makes a journey by railroad, has found that his trouble is entirely avoided when he takes one-tenth of a grain about every two hours during a journey.

The number of persons who suffer in this way is quite considerable, and the remedy is well worth a trial.

ACCORDING to Dr. Paul and Mr. Gerard, the enigmatical *hopeine*, which has puzzled the pharmaceutical, medical, and chemical world lately, is a mixture of morphine and cocaine.

Prof. Asa Gray, who had been applied to for information on American wild hops, and had been requested to obtain a sufficient quantity so that a thorough chemical study of its constituents could be made, sent the following letter to the *Pharm. Journal*:

"There is hardly a doubt that all the hops raised in North America are originally from plants introduced from Europe. If these will answer the purpose, it would be easy to have a sufficient quantity of American-grown hops sent to London; still easier to obtain them in the London market. But if hops from the native *Humulus Lupulus* are desired, this will not be easy. They grow, indeed, in a scattered way along the banks of certain streams, from Canada West to New Mexico, probably also in Arizona, but, if there, certainly in the secluded mountains only, and being dioecious, they can only now and then be found in fruit. I have myself seen the plant growing wild, but never in such a way that I could have gathered a pound of dried hops.

"If Messrs. Christy & Co. think such a sample would be of use, I will ask some of our Western botanists to look after it next summer. If it be true that the hop yields an alkaloid analogous to morphia, it is a most unexpected discovery."

THE last number of the *Berichte der Deutsch. Chem. Ges.* (No. 8, of 1886), just received, contains the report of Prof. Ladenburg, of Kiel, on the chemistry of "hopeine." Samples of this substance, such as it had been furnished to E. Merck, of Darmstadt, by the London Concentrated Produce Company, were found to agree in every respect, chemically and optically, with

morphine. Its ultimate analysis yielded figures which agree with those of morphine, but not with those of Williamson's hopeine.

In our April number, page 70, we also gave the percentage composition of the two alkaloids side by side, but the formula for morphine was erroneously quoted with O₄, instead of O₃, the correct figure.

This apparently settles the case of hopeine. But Dr. W. Williamson had isolated [or perhaps only pretended to have isolated?] some of this hopeine from American wild hops, and himself supplied Dr. Ladenburg with a quantity of 0.47 Gm. or not quite 8 grains, which insignificant quantity is in harsh contrast to the large amounts professedly available to the Concentrated Produce Company. Prof. Ladenburg, on examining this sample obtained from Dr. Williamson himself, one of the reputed "discoverers" of hopeine, found it to consist of morphine mixed with another alkaloid of greater solubility, the further investigation of which Prof. Ladenburg "naturally leaves to Dr. Williamson."

From other sources we have learned, since then, that this other alkaloid is cocaine.

THE following report of the Senate Committee on Military Affairs, submitted on the 8th of February last, has not been acted upon, as yet, owing to the prolonged discussions which have occurred upon "burning questions" of more political importance. It may well be hoped that it will be reached at some time before Congress adjourns. The bill does not seem to us to meet the just demands of the class for whom legislation is asked, either as regards the amount of pay allowed to the rank conferred, but it is a slight improvement in the first particular, and if the matter is kept before the attention of Congress, it is probable that something better may be obtained hereafter.

The Committee on Military Affairs, to whom was referred the bill (S. 1,119) to provide for the appointment of hospital stewards in the United States Army, and to fix their pay and allowance, have duly considered the same, and submit the following report:

This bill creates two classes of hospital stewards in the Army and fixes their pay and allowance. It provides that the first class shall be composed of those appointed by the Secretary of War and permanently attached to the Medical Department, as now provided by law, who shall be entitled to \$40 per month, the number of this class to be determined by the Secretary of War, and examination as to fitness and the recommendation of the Surgeon-General to be prerequisite to an appointment to this class.

The second class is to be composed of those appointed by the written order of a commanding officer upon the recommendation of a medical officer, the pay of the class to be \$30 per month, and in addition to the monthly pay of either class they are to be entitled to receive the increase pay for continuous service now allowed by law, the allowance for fuel, clothing, rations, quarters, etc., to be as now or as may hereafter be fixed by law or regulation.

Substantially the same bill was introduced in the House at the first session of the Forty-seventh Congress, and it secured a favorable report (No. 1,405) from the Military Affairs Committee of that body, which the report states had already been recommended by the Surgeon-General.

The report of the Surgeon-General for 1884 invites the attention of the Secretary of War to "the urgent claims of the hospital stewards of the Army to be placed, as regards pay and allowances, in a position commensurate with the important nature of their duties."

In the opinion of the Surgeon-General the services of hospital stewards "may be rendered more efficient and valuable if the qualifications requisite to constitute trustworthy and intelligent non-commissioned officers are more substantially recognized." The bill introduced appears to be a draft of the one recommended by the Surgeon-General in his report for 1884.

Hospital stewards are called upon to perform peculiar duties, professional in their character, and of a varied and important nature, involving efficiency, reliability, and competency. The post surgeon is often absent or sick, and the medical duties of the post at such times devolve upon the hospital steward, who is required to be an experienced apothecary or druggist, possessed of practical knowledge of applying leeches, bandages, dressing wounds, caring for the sick, and preparing food, in addition to the performance of other arduous labor. The hospital steward must be a good clerk, an efficient druggist, a thorough nurse, a good dentist, and a practical cook—five important occupations combined in one man, which would seem to call for compensation equal, at least, to that received by the subordinates of the other staff officers, and approximating that of Navy apothecaries, whose duties are identical with hospital stewards, and who receive \$60 per month for work less arduous than that performed by hospital stewards.

In view of these facts and the repeated recommendations of the Surgeon-General, your committee report the bill (S. 1,119) back, amended by striking out the word "fifty" in line two of section two, and inserting in place thereof the word "forty," and in line three of the same section strike out the word "twenty-five" and insert in place thereof the word "thirty," and as thus amended your committee respectfully recommend the passage of the bill.

TO amend chapter five hundred and two of the laws of eighteen hundred and seventy-nine, entitled "An act governing the sale of drugs and poisons in the county of Kings, state of New York." *

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section first, chapter five hundred and two of the laws of eighteen hundred and seventy-nine, is hereby amended so as to read as follows:

§ 1. It shall be unlawful from and after the first day of October, one thousand eight hundred and seventy-nine, for any person, unless a registered pharmacist, within the meaning of this act, to open or conduct any pharmacy or store for retailing, dispensing or compounding medicines or poisons, or for any one not a registered pharmacist, or registered assistant pharmacist, to prepare physicians' prescriptions, except under the immediate supervision

* Introduced by Mr. Longley—read twice and referred to the committee on public health—reported favorably from said committee and by unanimous consent ordered to a third reading and printed.—Passed by default of Governor.—Assembly Bill No. 520.

of a registered pharmacist, or registered assistant pharmacist, in the county of Kings.

§ 2. Section second is hereby amended so as to read as follows:

§ 2. Any person, in order to be registered, shall be either a graduate in pharmacy, a graduate in medicine, or a licentiate in pharmacy, or shall have passed a satisfactory examination before the board of pharmacy of the county of Kings, and received from them a certificate of qualification for either that of pharmacist, which shall entitle the person to act as principal, or that of assistant pharmacist, which shall only entitle the person to compound medicines and physicians' prescriptions, and dispense drugs, medicines and poisons under the direction of a registered pharmacist. Licentiates of other boards of pharmacy, or legally constituted pharmaceutical bodies, may be registered by the board of pharmacy of the county of Kings, if said board deem such action proper.

§ 3. Section third is hereby amended so as to read as follows:

§ 3. Graduates of pharmacy and graduates of medicine, under the requirements of this act, must have had at least four years' practical experience in stores where prescriptions of medical practitioners have been compounded, and have obtained a diploma from some legally constituted college of pharmacy or medicine. Licentiates in pharmacy must have had before examination four years' practical experience in stores where prescriptions of medical practitioners have been prepared, and shall have passed a satisfactory examination before the board of pharmacy of the county of Kings, or before any other board of pharmacy or legally constituted pharmaceutical body recognized by the board of pharmacy of the county of Kings.

§ 4. Section four is hereby amended so as to read as follows:

§ 4. The board of pharmacy of the county of Kings shall consist of five members, two of whom shall be pharmacists qualified for registration as aforesaid, to be elected by the Kings County Pharmaceutical Society, at a special meeting to be called for the purpose, within two weeks after the passage of this act; two practitioners of medicine to be elected by the medical society of the county of Kings, at its next stated meeting after the passage of this act, and a pharmacist, who shall also be a secretary of the board, to be elected by the joint ballot of the members elected as herein provided for. Such officer shall be elected triennially thereafter in a similar manner. The members of the board shall within thirty days after their election as aforesaid, individually take and subscribe before the clerk of the county of Kings an oath faithfully and impartially to discharge the duties prescribed for them by this act. They shall hold office for the term of three years, and until their successors are duly elected and qualified, and in case of vacancy, it shall be filled in manner herein provided, to wit: within ninety days of its occurrence the body which elected the person whose place is to be filled shall elect his successor at a meeting, the purport of which due notice shall be given.

The board shall organize by the election of a president to serve for the full term. The board shall meet at least once every three months, and three members shall constitute a quorum. The duties of the board shall be to examine and register pharmacists and assistant pharmacists in the regular order of their application, to transact all business pertaining to the legal regulation of the practice of pharmacy in said county, and to examine into and adjudicate upon all cases of alleged abuse, fraud, malpractice, or incompetence, to make such rules and regulations not inconsistent with the laws of

this state, as it may find necessary to carry into effect the provisions of this act, and it shall be competent for the said board, by a vote of three-fifths of its members, to suspend or revoke the registration of any practising pharmacist, or assistant pharmacist, after due notice and trial before said board. It shall be the duty of all persons not exempt therefrom by the provisions of this act to appear and apply for examination within ninety days after the organization of the board. And any person so applying shall furnish to the board satisfactory evidence that he has had at least four years' experience in the compounding of physicians' prescriptions and in the general duties of pharmacy, and shall pay to the secretary of the board a fee of five dollars. And should he pass such examination satisfactorily, he shall be furnished with a certificate as to his competency and qualifications, signed by the members of the board of pharmacy, which certificate shall be his warrant for registration. All persons registered by this board shall, upon payment of the prescribed fee, receive from this board a certificate of registration, and such certificate of registration shall be conspicuously displayed in the store or place where the person holding the same is engaged. In case of failure to pass a satisfactory examination, he shall be granted a second examination without the payment of further fee; provided he present himself for re-examination within six months.

§ 5. Section nine is hereby amended so as to read as follows:

§ 9. Any person who shall attempt to procure registration for himself, or for any other person under this act, by making or causing to be made any false representation, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be liable to a penalty not exceeding five hundred dollars. Any registered pharmacist who shall permit the compounding and dispensing of prescriptions of medical practitioners in his store or place of business, by any person or persons not registered except under the immediate supervision of a registered pharmacist, or registered assistant pharmacist, or any person not registered who shall keep open shop for the retailing or dispensing of medicines or poisons, or any person not registered who sells, compounds or dispenses drugs, medicines, or poisons, or prepares physicians' prescriptions, except under the immediate supervision of a registered pharmacist or registered assistant pharmacist, or any person who shall fraudulently represent himself to be registered, or any registered pharmacist or dealer in medicine who shall fail to comply with the regulations and provisions of this act, in relation to retailing and dispensing of poisons, shall, for every such offense, be deemed guilty of a misdemeanor, and upon conviction thereof be liable to a penalty not exceeding five hundred dollars.

§ 6. All previous acts and parts of acts relating to the practice of pharmacy or the sale of medicines or poisons in the county of Kings, inconsistent or conflicting with this act, or the act hereby amended, are hereby repealed.

§ 7. This act shall take effect immediately.

A REWARD of 5,000 rupees [equivalent, at the present rate of exchange, to about 375 pounds sterling] has been offered by the Government of India for the discovery of any process that will render salt unfit for human consumption, while still leaving it fit for use for cattle, as manure, or for industrial purposes. A collection of papers on the subject can be obtained on application at the Revenue Department of the India office, St. James Park, London, S. W. (*Chem. and Drugg.*)

THE Senate of France offers a prize of from 25,000 to 50,000 francs for the discovery of the best practical method for ascertaining the toxic principles and impurities to be found in "vinic" alcohol.

THE *Union Pharmaceutique* states that, in a perfectly serious advertisement, a French oyster dealer offers for sale both ferruginous oysters and tar oysters.

MR. WALTER H. DODD, L.R.C.P., expresses, in a letter to the *British Medical Journal*, his surprise at the result of an attempt to make terebene by shaking together one part of sulphuric acid and five parts of turpentine in a closely corked bottle. He did not succeed in producing terebene, but he made a first-class explosion, and was relieved of any economical scruples respecting the quality of the clothing he wore.

A SERIES of experiments by Sir W. Roberts on the influence of food-accessories on digestion is reported in the *Nineteenth Century*. One of the most unexpected results of these experiments was the discovery that beef-tea has a powerful retarding effect on stomach digestion, as much so as a 5% infusion of tea. Further researches appear to show that this retarding effect of beef-tea is due to the salts of the organic acids contained in it. Beef-tea contains but very little nutritive properties, and must be looked upon rather as a stimulant than as a nutrient; but it is nevertheless very valuable as such.

Preservation of Salicylate of Sodium.

If salicylate of sodium is exposed, for some time, to the light, in a white glass, the exposed portion will acquire a darker color in four to six weeks. At the same time it will have lost its faintly acid reaction, and will yield a colored solution. On the other hand, the portion which had not been exposed will have remained unaltered, produce a colorless solution, and have a slight acid reaction.

This is the experience reported by different observers, and has recently been again pointed out by a correspondent of the *Pharm. Centralhalle*.

It appears, therefore, that salicylate of sodium should be protected from light. And as it is hygroscopic, it should also be protected against dampness.

Reaction of Chlorate of Potassium with Chloral.

WHEN 165 grammes of chloral hydrate and 37.43 grammes of potassium chlorate are finely powdered and exposed to direct sunlight in a flask fitted with a reflux condenser, a reaction soon begins with great rise of temperature, and the flask must be cooled by immersion in cold water. Chlorine, phosgene gas, carbonic anhydride, and chloroform are given off. In four days the reaction is complete, and a separation of crystals takes place which may be increased by surrounding the flask with ice. The whole is then filtered and washed with absolute alcohol. Water is added to the alcoholic solution, which then yields on evaporation very pure hydrogen potassium trichloracetate. A small quantity of perchlorethane is also formed in the reaction. --*Ber. D. Ch. Ges.*, 18, 3336, and *Pharm. Journ.*

A GERMAN linguistic purist, who objects to the name "Apotheker" as being of foreign origin, suggests that it be replaced by the following title, which expresses the functions of an apothecary in a brief and concise manner: "*Gesundheitswiederherstellungsmittelzusammensetzungskundiger*."

Semi-Annual Report on Drugs and Chemicals.

(From Gehe & Co.'s Trade Circular for April, 1886.)

Acetone, which is used in the manufacture of chloroform and iodoform, has advanced about 25%.

Aconitine.—In a previous issue, we have quoted an abstract from a paper by Buntzen and Madsen on the aconitines of the market, in which the crystalline aconitine of Gehe & Co. was reported to be the most active preparation now on the market, even exceeding that prepared by Duquesnel's process.

Gehe & Co. have been asked to communicate their process of manufacture to the International Pharmacopœia Committee, but it appears from what they say in their Trade Circular that they are not willing to give every detail of it, which is to be regretted, as the knowledge of the process would, perhaps, help to throw a better light on the whole chemistry of aconite. Gehe & Co. express themselves as follows:

"We have already, on a previous occasion, made the public announcement that our process is mainly based on that of Duquesnel, with this difference, that we use *oxalic* instead of *tartratic* acid in the first extraction. Nevertheless, the saying 'si duo faciunt idem, non est idem' is particularly true in the case of the manufacture of aconitine. The cause of difference lies in the different observation of the necessary precautions. The chief conditions for obtaining a satisfactory product are, avoidance of any temperature over 78° C. (172.4° F.) when distilling off the alcohol, and over 50° C. (122° F.) when working with aqueous liquids; also avoidance of any excess of acids or bases. To carry this out, it is necessary to employ the most perfect technical means, that is, the vacuum process at every stage of the operation. But such apparatus has, up to the present, not been an obligatory utensil in the laboratories of pharmacists, and it is for the latter that the process is to be given" [in the International Pharmacopœia. These last words we supplement ourselves, as they were evidently intended. We desire to say, however, that it is by no means the object of this or any other Pharmacopœia Committee to introduce a process of this kind into the pharmacopœia for the purpose of having every pharmacist prepare the article himself, but as a means of *helping to give a precise definition of the kind of alkaloid* which it is intended to make officinal. As long as it is impossible to give unmistakable and sharp differences between the different aconitines, as obtained by different processes, so that each could be clearly distinguished by tests from the other, it will be absolutely necessary to know the exact process by which it is obtained. In such a powerful drug as *aconitine* (or for that matter, others, like digitaline, curarine, etc.), it is not enough to know or to designate the name of the manufacturer ("Merck," "Gehe & Co.," "Duquesnel," "Nativelle," etc.) behind the name of the article. The physician, as well as the pharmacist, should be given every chance to control the identity of the substance, as the name of the maker (no matter how great his present reputation may be) is not an infallible guaranty that the quality or strength of the article will always continue to be the same in the future].

Adonidine, used as a substitute of digitaline, and reported to be much more prompt in its action, has been much used in spite of its high price.

Agaric of the Larch.—Only a moderate supply reached Hamburg last year from Russia, and the price advanced considerably. [In this country it is scarcely at all used, except, per-

haps, as an ingredient in Warburg's Tincture.]

Agaricin, the active principle extracted from the preceding, and which is in reality an acid (agaric acid), has been in increased demand, being one of the most effective remedies, either alone or in conjunction with atropine, to stop the exhausting perspiration of consumptives and other abnormal sweats. Gehe & Co. say that the dose should begin at 0.005 Gm., or about $\frac{1}{4}$ grain, and should not be carried higher than 0.015 Gm., or $\frac{1}{2}$ grain. [This is correct, but it should be added that a dose even considerably above $\frac{1}{2}$ grain is not poisonous, but merely less effective for the purpose for which it is given. Compare our last number. Any agaricin, however, which is not deprived of the red resin, and therefore has not a pure white color, must be used with some caution, as the red resin is a powerful cathartic.]

Aluminium Metal.—The reduction of metallic magnesium to one-fifth of its previous price promises to be followed by a similar reduction in the price of this metal. Its wide applicability is, perhaps, not even appreciated. Among other practical uses, it is likely to be employed for coining; in fact, the proposition has already been made in Germany to supplant all nickel currency by one made of 100 parts of aluminium and 5 of silver. This alloy is entirely white, does not oxidize in the air, and has a brilliant lustre.

Antipyrin may now be considered as one of the staple remedies. Gehe & Co. have previously reported its consumption, compared with that of quinine, to be in the proportion as 1 to 5, and they still maintain that this is correct. [This may be true of Germany or the continent of Europe, but it is an exaggerated proportion so far as this country is concerned, though very considerable quantities are consumed here.]

Araroba has been in active demand, both in the form of Goa powder and for the preparation of chrysarobin. It is the general experience of all who have to handle this drug, that every person who is compelled to be near it when it is run through a mill or sifting apparatus suffers from inflammation of the conjunctiva for two or three days. On the other hand, the supposed active principle of Goa powder, namely, chrysarobin, does not, by any means, affect the eyes in the same severe manner; and it is only in very sensitive persons that it exhibits such effects. It seems, therefore, that *chrysarobin* is not the real active principle of araroba. Dr. Lesser has experimented with the mother-liquid, left behind when araroba is extracted by boiling benzol, and the chrysarobin has crystallized out. On evaporating the mother-liquor, he obtained an amorphous substance, which was found to be much more active, dermatologically, than chrysarobin.

Belladonna Root.—Gehe & Co. state that they found it difficult to procure the Hungarian Belladonna root necessary for their atropine manufacture. Japanese Belladonna root (from *Scopolia japonica*) is also in the market. This contains two alkaloids, *rotoine* and *scopoline*, of which the latter is sometimes asked for.

Bismuth.—The steadiness in the price of this metal appears to prove that the new Australian production, regarding the extent of which no reliable information can be obtained, has been pooled with the Bolivian and Saxon output.

Bismuth Peptonate, a new compound (of doubtful vitality, in our opinion), is prepared so as to contain 3% of oxide of bismuth.

Borax.—The great fall in the price of this article in Germany and other continental countries is due to the large extension of borax manufacture in Hamburg, from the crude borate

of calcium imported from Chili. The *boracic acid* of Tuscany, which is the source of borax for the English and French manufacturers, has, in consequence of this, also been reduced in price, and borax has even been commenced to be manufactured in Tuscany itself. California borax has ceased to have any importance for the European market.

Boric Acid.—This acid is now used in considerable quantities, in Norway, as a preservative substance for fish (herring). Powdered boric acid is mixed with salt, in the proportion of 2 parts of the former to 1 part of the latter. The fresh herrings are packed in casks or kegs precisely like salt-herrings, and each layer is sprinkled with the salt mixture. When the cask is full, and has been made tight, it is filled with a solution of pure boric acid. For a keg of herring $2\frac{1}{2}$ lbs. of boric acid and 5 lbs. of salt are required as material for sprinkling between the layers, and about 10 ounces of boric acid for making the brine. The cost of pickling 800 to 1,000 herrings is only about 75 cents per cask or keg.

Caffeine has found increased consumption, and is lower in price than before, although the material from which it is prepared is more expensive. Good tea is dear, and inferior tea does not pay the cost of working. It is, therefore, important that, besides the four different former sources of caffeine—viz., coffee with about 1 per cent, maté with $\frac{1}{2}$ per cent, tea with 1, 2 or more per cent, and guarana with 5 or more per cent—there is now a fifth one available, namely, the kola-nut, which contains, besides theobromine, about 3 per cent of caffeine, which is very easily extracted.

Calabar Beans have become scarce, since large quantities are consumed in the manufacture of physostigmine.

Cardamoms.—The large arrivals of cardamoms, particularly from Ceylon, which produces now not only the "long cardamom," but also large quantities of the short Malabar variety, had the effect of depressing the price, so that it was at the end of the year 1885 only about half of what it had been in the beginning of 1884.

Carnauba Wax.—The importation of this Brazilian product at Hamburg has been 400,000 lbs. during the last year, against only 50,000 lbs. during the preceding year.

Chloroform.—As is well known, the new process of manufacturing chloroform consists in the substitution of acetone for alcohol, only 7 parts of the former being required in place of 11 parts of alcohol. Nevertheless, the old process (with alcohol) is still followed, as the price of alcohol [in Germany there is no duty collected on alcohol used for manufacturing purposes, where the alcohol does not enter, as such, into the product] is so low that it does not pay to use acetone. [The same is the case in England at the present time.]

Chrysarobin.—Regarding the diminished therapeutic efficacy of this remedy, and its probable cause, see Araroba.

Cinchona Bark has experienced a series of fluctuations which have not been felt by the general pharmaceutical public so much as by the manufacturers of quinine. After the price, per unit, had fallen in June to 4-4 $\frac{1}{2}$ pence, it rose in July to 5 or 6d, chiefly in consequence of heavy purchases of American manufacturers, who tried to force up the price of the bark, while they kept the price of quinine at almost the same level, their object being to prevent the importation of European quinine. Further, subsequent large purchases raised the unit to 7, 8, and even 8 $\frac{1}{2}$ pence. The consequence of this was that immense quantities of Ceylon bark were thrown upon the market, not less than 4,552,121 lbs. being delivered in London in the last

three months of 1885, against 1,890,781 lbs. and 1,643,124 lbs. in the corresponding months of the preceding two years. Up to February 15th of the present year, the shipments of Ceylon bark amount to 5,753,368 lbs., against 3,731,702 in the same period of the preceding year. Nevertheless, every consignment found ready purchasers. Although it has repeatedly been stated that the bad financial results of cinchona plantations in Ceylon would result in a great contraction of this enterprise, yet every year brings larger quantities of the bark. Hence it appears that no great reliance can be placed on these rumors. Increased shipments of superior bark have also been made from other directions, particularly from Java. Colombia is also expected again to furnish larger quantities, both of naturally-grown and of cultivated Calisaya bark, satisfactory specimens of the latter having already reached the London market.

Cornutine—a principle extracted from ergot by Dr. Kobert (AM. DRUG., 1885, 25) has been in some demand. [No further positive reports as to its therapeutic effects have come to our knowledge.] It has the remarkable property (which it shares with Tanret's *ergotinine*) that it is rendered deep sky-blue by sulphuric acid.

Coto Bark.—The true Coto bark is no longer obtainable, according to the assurance of the present importer. The para-coto bark, however, is still available in sufficient quantity.

Cubebs.—Gehe & Co. believe that the so-called false cubebs which have made their appearance upon the market, and about which a good deal has lately been written, are probably nothing else but unripe cubebs collected in different states of development. In the previous report (see AM. DRUG., 1885, p. 212) it was stated that when genuine cubebs are ground in a mortar with concentrated sulphuric acid, they acquire a carmine color, while spurious cubebs take a reddish-brown to brownish-red tint. [We added the remark at that time that this reaction, as a means of distinguishing between the different kinds of cubebs, needed confirmation.] Gehe & Co. now state that the reaction depends upon the amount of *cubebin* present. This is contained in the inner portion of the fruit, and is more abundant in unripe than in ripe fruit. The riper the seeds become, the more does the *cubebin* appear to diminish, while the amount of starch increases. Hence very ripe, though genuine cubebs will probably not give the reaction at all. A decoction of cubebs will always turn blue with tincture of iodine, as the fruit always contain more or less starch. Unripe fruit, however, will be colored less intensely, as they contain a smaller amount.

The consumption of cubebs appears to be constantly on the increase. Nothing reliable, however, can be learned about the expected crop. The quality of the drug leaves much to be desired.

Coca Leaves have been, for a year past, an important article, particularly for Hamburg, where the imports of the three kinds now distinguished in the market—viz., Bolivian, Peruvian (Lima), and Truxillo leaves—concentrate themselves. The Truxillo leaves have a handsome color, but are usually badly broken up, and are not liked by manufacturers of cocaine. New York imported during 1885, 285,000 lbs. of coca, of which 225,000 lbs. were consumed.

Cocaine.—Messrs. Gehe & Co. only confirm what is well known from other sources, namely, that the good effects produced by cocaine in curing the morphine habit are counterbalanced by the fact that *cocomania* very often takes the place of *opiomania*.

Codeine is gradually declining. Heretofore there was a regular see-saw

between the price of morphine and codeine, either the one or the other being temporarily the most valuable, while the other almost sank to the position of a by-product. At present, the relation is quite anomalous. With the falling of the price of codeine, morphine has not only not advanced, but has even receded in price likewise.

Ergotinine.—Its reaction with sulphuric acid (deep sky-blue color) has been mentioned under *cornutine*.

Extracts, Fluid.—It is remarkable that Gehe & Co., Merck, and many other prominent houses appear to know only a limited number of the fluid extracts prepared in this country, while the most important ones they seem to be ignorant of. Their knowledge of the whole subject seems to be still fragmentary, and even the names of some of the drugs are given incorrectly.

Extracts, "Pasteurized".—Gehe & Co. make a remarkable statement. They make the announcement that the process of "Pasteurizing" has been employed by them from the very beginning of their manufacture of solid extracts, in this way, that the liquid extract obtained by exhausting the drugs at a low temperature was rapidly heated to 100° C. (212° F.), with exposure to air, and afterwards evacuated in vacuo. This process insured in most cases the stability and keeping qualities of the product. [Of course, the heat employed causes the coagulation of pectin bodies and other substances which are usually the cause of fungoid growth or fermentative processes. It is a question, however, whether certain drugs containing delicate alkaloids, such as belladonna, aconite, digitalis, etc., will stand this process without some loss of active material. In this country we avoid the use of heat as much as possible, and endeavor to exclude the mucilaginous and pectin-like bodies by selecting a menstruum which will leave them behind as much as possible, while it will extract the active principles.]

Guarana arrives only occasionally, and in small lots. It is not likely that it will be cheaper during the present year.

Gum Arabic.—The best medicinal varieties have become quite scarce and dear. While 855 seroons were in first hands in Trieste at the beginning of 1885, only 8 seroons were reported to be on hand in January, 1886.

All sorts of East Indian and other varieties of gums, which were thought to be serviceable as a substitute for gum arabic, have been thrown on the market, though only the easily soluble kinds found purchasers.

Gum Senegal has also correspondingly increased in price.

Hippuric Acid.—This acid was in active demand, not only in the free state, but also in its combination with lithium, sodium, and calcium. It is highly extolled by French physicians as a solvent of urates in articular rheumatism.

Iceland Moss.—The collection of Iceland moss in the Riesengebirge (mountain chain between Bohemia and Silesia) has been forbidden, or at least restricted, to prevent damage to the forests.

Ichthyol.—This name is now applied by Gehe & Co. to the ammonium salt ("sulpho-ichthyolate of ammonium") of the original acid substance, introduced as ichthyol. For some time past, they prepared the latter as a sodium salt, and also called it ichthyol. It has been ascertained that the ammonium salt is preferable.

Kamala has been scarce and of very poor condition. It has been impossible to obtain any that would come up to the pharmacopoeial requirements (Pharm. Germ., 6% of ash; the U. S. Ph. allows 8%, but we have reason to know that even this is far from being attainable).

Kefyr.—The demand for this Caucasian milk-ferment has increased. The best quality, known as "Bulgarsky," is not always attainable; hence other sorts have to be often used, which are, however, also of good quality, for instance that known as Chulamsky.

Kola Nuts.—Heretofore these nuts were obtainable in London only as a curiosity or in small lots. A consignment of them is expected to arrive shortly at Hamburg. It is already well known that these "nuts" combine the properties of tea and cacao, and are likely to form an important article of African export in the future.

Lithium Carbonate.—The preparation of lithium salts from lepidolite, which contains silicate of lithium and aluminium, is a difficult operation, which is the reason that but few chemical works undertake the manufacture. In Germany there is only one locality where the mineral is mined; but this does not furnish enough, particularly as only a tolerably pure mineral pays working. Hence outside localities had to be drawn upon, particularly a mine in Moravia, which has entailed considerable expense. At present, the most generally demanded salt, namely, the carbonate of lithium, cannot be obtained in sufficient quantities at all, and higher prices must certainly be expected (indeed, they have already commenced).

Lycopodium is quite scarce, and stocks are likely to be exhausted towards the end of summer.

Magnesium.—The revolution in the process of manufacturing this metal, for which metallic sodium heretofore formed the starting-point, has reduced the former cost to one-sixth. It is now prepared in Bremen by electrolysis under Graetzel's patent. In consequence of this, its application in the arts will be very largely increased, and it will particularly serve as a most effective illuminating agent, rivaling in cheapness the more expensive light-giving substances or agents.

Milk-sugar.—The manufacture of sugar of milk in Germany has become firmly established, and promises an increased output in the near future.

Naphthalin, recrystallized.—The employment of this substance as an internal medicine, originated by Rossbach, is constantly increasing. It is best administered in the form of trituration with sugar, flavored with oil of lemon. According to the *Journal de Médecine*, the usual doses are, in catarrh of the stomach and intestines, 8 to 80 grains daily; in diarrhoea of infants, 1½ grains every two hours; in typhoid and tuberculous diseases of the intestines, 8 to 24 grains a day. It may also be given per rectum, suspended in a weak mucilage or decoction of marshmallow.

Naphthol.—The demand after this is becoming continually greater. The "Hydronaphthol," introduced as a powerful antiseptic agent—to judge from the description and formula given for it—is nothing else than the well-known β -naphthol.

Osmic Acid.—This acid (as well as some of its salts) which was formerly used in epilepsy and as a caustic for certain morbid growths, is now also employed in [sciatica and similar forms of] neuralgia. Since its aqueous solution does not keep long, Schampiro recommends to dissolve it in glycerin and water:

Osmic acid.....gr. 1½.
Distilled water.....m 90.
Glycerinm 60.

Hypodermic dose: 5 drops at one injection. The above solution is said to keep for weeks.

Quinine.—The past year was not a satisfactory one for the manufacturers. Owing to a diminished demand and increased production, the selling price at times was depressed to the bare cost of manufacture.

Quinine is not likely again to be seized upon by speculators in the same degree as in former times. The advance of science has furnished products which rival with quinine in their effects, and have reduced its consumption materially. Among these are thalline and antipyrin, the latter of which is estimated [by Gehe & Co.] to have reached a consumption in Europe, amounting to *one-fourth* of that of quinine.

Saccharin.—This sweet substance obtained from the coal-tar series—the anhydro-ortho-sulph-amine-benzoic acid; see our February number, page 39—promises to have a useful future [provided its innocuousness is confirmed by further experiments]. The patentees propose a mixture of 1 part of it in with 2,000 parts of glucose, as being in every respect equal, in sweetness, to ordinary sugar. The substance is suggested as a corrigent for medicines of bitter taste, or as a sweetening agent in diseases where sugar is to be avoided (as in diabetes).

Salicylic Acid.—The consumption of this article is constantly increasing, in spite of the open war which has been declared against its use as an antiferment for beer in Bavaria. The stringent measures which have been adopted in that country against any substitutes for malt or hops, and the heavy penalties laid upon infringement of the laws regulating the manufacture and sale of food and drink, have raised the reputation of Bavarian beer in a remarkable degree [and the export has increased in an astonishing ratio].

Strychnine has been in active demand, particularly for destroying the rodents infesting the fields. Even now, after the close of the winter, the demand has not ceased, showing that many of these have survived the winter. A good deal of the strychnine formerly used in Germany came from the United States. At present this country cannot produce enough for home consumption, for want of raw material.

Sulphurous Acid in Glycerin.—A solution of SO₂ in glycerin containing not less than 5% of the former, has been used with great success by Dr. Schottin as a local application to diphtheritic membranes. It is applied with a camel's-hair pencil.

Thalline and Salts.—This remedy was formerly administered in doses of 4 to 5 grains. Since it has been, however, observed to be very quickly absorbed by the stomach, and much more rapidly eliminated by the kidneys than antipyrin, it has occurred to Prof. Ehrlich and Dr. Laguer to employ it in smaller doses at shorter intervals. The doses finally settled upon were $\frac{1}{2}$ to 1 grain every hour, gradually increased by about $\frac{1}{4}$ grain, in intervals of 2 or 3 hours until the temperature of the body has been reduced to the desired point. When the proper dose has thus been ascertained, it is advisable to administer it either in pill or in mixture every hour during the day and every two hours at night. **Sulphate of thalline** is the salt at present preferred.

Tjen-Tjan Gelatin.—This vegetable gelatin (misnamed Japanese "isinglass") which usually passes in trade under the name *agar-agar* (which latter denotes the algæ from which it is made), is finding extended use for technical and culinary purposes.

Tonka Beans.—The high price of these has helped to increase the consumption of artificial cumarin. It has also been the means of rendering successful the experiment of introducing the American vanilla (*Liatris odoratissima* Willd.)* as a flavoring for tobacco.

Coca.

(Continued from page 102.)

The life of a shrub, so far as the harvest of leaves is concerned, varies between wide limits, say from 7 to 50 years. There are even places where they are said to yield crops for 100 years, and to attain the size of trees. According to Clerc and Grandier, the shrubs attain their highest development 2 years after the first harvest, retain it for about 4 years, and then gradually deteriorate. This short life, however, is supposed to be due to faulty methods in cultivation.

The leaves are collected either singly or by stripping them off the twigs. This is usually done by women (*polladoras*) and children. Work is carried on from early in the morning to late in the evening in order to fill as many *matus* (baskets or aprons full of coca) as possible. These are emptied into sacks, and immediately carried to the haciendas by special laborers (*materos*). It is generally assumed that 2 to 3 *cabezas* (1 *cabeza* is a furrow of 150 feet in length, containing 100 shrubs) yield 1 *arroba* (25 Spanish pounds, or 244 avoird. pounds) of leaves, which require the labor of 4 to 5 women during the day.

Great care is required in drying the leaves, particularly as the weather—which is very variable in the home of coca—has a decisive influence not only on the success of the harvest, but also on the quality of the leaves after collection.

In well-conducted haciendas, there is a special court-yard, open or closed, which is used as drying ground; and the most progressive of these are carefully paved with black slate (*pizarra*). This is called *cache* in some provinces; in others *matupampa*. In other haciendas, the court-yards are small, the ground merely stamped down and smoothed, occasionally covered with boards, mats, etc., and but seldom paved. Now and then, they contain several stories of wooden platforms or floors.

The method of drying is extremely primitive, and consists in this, that the leaves are spread upon the drying ground, during sunny days, to a height not exceeding about 14 inches, and frequently turned over by wooden sticks. The frequent and sudden rain showers render the drying exceedingly difficult, and often ruin the whole crop, because the leaves acquire a black color by exposure to dampness, and become shrivelled. This unsalable coca is called *coca goñupa*, or *yanacoca*. To avoid this danger, special persons are engaged to watch the weather. When there is the slightest change of the latter, the leaves are returned to the huts, to be again spread out after the rain is over and the water has evaporated from the soil.

The most highly valued and highest priced leaves are those which have been dried in the course of one day (*coca del día*).

Garciasso and all other connoisseurs of coca state that the best coca is that which has not been completely dried, but is still flexible, and appears as if it had a hoary coating. A good quality is also furnished by that which has been dried in the course of 2 or 3 days without having become damp in the mean time. The next quality is furnished by leaves which have required a still longer period of drying.

During long continued rain, the leaves which are stored, in a damp condition, in huts, where there is no chance of spreading them out, undergo a process of fermentation, by which they acquire a nauseous taste. The natives call this change *cholarse*.

According to Clerc, the gathered leaves are at the present day not immediately transported to the drying place, but are spread out in the huts to a depth of about 2 inches, and next

day dried in the *matupampa*, being frequently turned over.

Leaves which have become black by dampness are subjected to a special process, which consists in exposing them for some time to the sun, and walking upon them with wet feet.

In Brazil, the leaves are usually dried at an open fire or in an oven.

Some method of drying by artificial instead of solar heat, at a temperature not exceeding 35° C. (95° F.), in properly constructed drying rooms, would probably remove many of the difficulties and risks at present encountered.

The dried leaves are kept, in most of the montañas, particularly in Huanuco, under woollen covers, or packed in linen, and laid upon boards in the store house, which latter are required to be dry and somewhat cool.

The leaves are finally packed, by strong pressure with the feet—but only during fair weather—in sacks made of a coarse woollen stuff (*jerga de la sierra*), the color of which differs in different localities. Huanuco sacks are gray or black; those of Vitoc gray and white; those of Huanuco and Anco black and brown. Sometimes they are lined with banana leaves. The finished bags are designated by names expressing their weight. In the *yungas* of Bolivia, the leaves are laid as flat upon each other as possible, and regular piles of these pressed together, by means of wooden screw-presses of 26 inches in height and 16 inches in diameter, in wooden forms lined with banana leaves. The bricks thus formed are covered with a coarse fabric made of lama-wool, and packed in bales weighing about 3 *arrobos*.

In order to protect the bales or bags from moisture during the transportation, they are carefully covered, already on the day of shipment, with woollen covers. In some districts, regular refuge places are built, where caravans may find shelter from rain.

In warm countries coca should not be kept in stock longer than one year, and in colder countries not over eighteen months or two years. This is the opinion of the natives, as reported by Poeppig.

Removal of Nitrous Acid and Ammonia from Water.

In attempting to prepare distilled water from impure water containing nitrous acid or ammonia, it will generally be found that these impurities pass over into the distillate. This may be prevented, according to Hager, by the use of permanganate and alum. If the water contains ammonia, this must be first removed by the addition of 0.15 to 0.3 per cent (of the weight of the water) of potash-alum. Afterwards the nitrous acid may be oxidized by adding about 0.5 per cent of a dilute solution of permanganate of potassium (1 in 1,000). The nitrous acid is converted into nitric, and combines with the potassium of the permanganate.—*Pharm. Contralh.*, No. 13.

Note.—If the water is filtered or otherwise clear, the above quantity of permanganate may be sufficient. When the water is very impure, however, it is necessary to add a much larger quantity. Indeed, it may be taken as a rule that enough should be added until the permanganate is no longer reduced at a boiling temperature. The distillate thus obtained, however, is probably never absolutely free from ammonia. If perfectly pure distilled water is wanted, it should be once more distilled, a small quantity of pure sulphuric or phosphoric acid having previously been added to it.—*Ed. AM. DR.*

Pressure of Wind.

The pressure of wind to the square foot is estimated at 2, 4, 8, 12, 18, 25, and 32 $\frac{1}{2}$ pounds with wind having a velocity of 20, 30, 40, 50, 60, 70, and 80 miles per hour.—*Sci. Amer.*

*A full description of this, by Dr. Thomas F. Wood, of Wilmington, N. C., will be found in *New Rem.*, 1883, p. 66. The microscopic characters of the leaves, by W. Kerr Higley, of Lake Geneva, Wis., are published in *New Rem.*, 1883, p. 260.

FORMULAS.

To Remove Nitrate of Silver Stains.

THE following is suggested by Mr. George R. Underwood: Dip the fingers into a strong solution of cupric chloride. In about a minute, the silver will be converted into chloride, and may then be washed off with hyposulphate of soda solution.—*Chem. and Drugg.*

Sedative in Painful Dentition.

Cocaine Hydrochlorate.... 4 gr.
Sodium Borate..... 4 gr.
Syrup of Althaea..... 64 ℥.
Syrup of Poppy, to make. 100 ℥

Rub the gums gently with a little of this syrup several times a day.—After *L'Union Med.*

Iodol and Terebene.

Iodol.....10 gr.
Terebene..... 1 fl. oz.

Dissolve and keep in bottles of non-actinic (deep amber-colored or ruby) glass; or keep in ordinary bottles in a dark place.

Used as an antiseptic either by spraying, or by saturating dressings with it.

Sulphur Skin Lotion.

Sulpho-carbolate of Zinc....gr. 20
Oxide of Zincdr. 2
Precipitated Sulphur.....dr. 1
Eau de Cologne.....dr. 6
Glycerin.....dr. 6
Rose-water to.....fl. oz. 6

Rub up the zinc oxide and sulphur with the eau de cologne, then add the glycerin and rose-water in which the sulpho-carbolate has been dissolved. A pinch of carmine may be used to color.

Cherry Tooth Paste.

A FORMULA recently recently published in the *Chem. and Drugg.* is as follows:

Precipitated Chalk ...8 oz.
Powdered Orris... 2 "
Sugar.....1 "
Glycerin.....1 1/2 "
Liquid Cochineal.....q. s. to color.
Oil of Cloves.....5 drops.
Oil of Wintergreen.....2 "
Oil of Peppermint.....2 "
Water.....q. s.

Rub the orris and chalk with the oils, add the cochineal, then the sugar and glycerin, and sufficient water to make a paste.

Antiphlogistic Powder for Infants.

For some time past, a compound powder has been used in some districts of Germany, which is popularly known as "Bismarck powder," and has acquired some reputation, locally, as a remedy for various affections of children, such as painful teething, loose bowels, cough, etc., wherever there is more or less rise of temperature. It is composed of

Tannate of Quinidine....10 parts.
Carbonate of Magnesium.1 part.
Licorice Root, powd....4 parts.
Sugar40 "

Of this powder, a small quantity—about 5 grains—may be given every 1, 2, or 3 hours, best in a little milk.—After *Pharm. Centralh.*, 1886, 178.

Moth Destroyer.

1. Naphthalin..... 50 parts
Carbolic Acid.....25 "
Ceresin.....25 "

are melted together, and the hot mixture is spread, by means of a broad brush, upon unsized paper, laid upon

a hot surface, care being taken that this is not done near any light or fire.

Instead of laying the paper on a hot surface, the paper may be coated with the warm mixture diluted with ten parts of alcohol. As this does not dissolve the ceresin, the mixture must be well stirred with the brush before applying it.

2. Patchouly, cut.....10 parts.
Rosemary, cut... ..20 "
Thyme, cut.....20 "
Sage, cut.....20 "
Naphthalin.....20 "
Oil of Mirbane2 "
Oil of Turpentine..... 5 "
Alcohol.....50 "

Dissolve the naphthalin and oils in the alcohol by the aid of heat, and sprinkle the solution while hot upon the mixed herbs or leaves. Introduce the mixture into bags of suitable size, and lay them between the clothes to be preserved, which should be firmly wrapped, securely packed, and kept in a cool place.—EUGEN DIETRICH in *Pharm. Centralh.*

3. A formula given in one of our exchanges is as follows:

Camphor.....4 parts.
Cedar Sawdust.....4 "
Black Pepper.....2 "
Benzoin1 part.
Capsicum.1 "

Reduce to a coarse powder, and mix.

Ess-Bouquet.

THE following formula is given by Eugen Dieterich in the *Pharm. Centralh.*:

Triple Extract of Jasmin.. 770 grs.
Ambergris 2 1/2 "
Musk..... 1 "
Cumarin..... 1 "
Heliotropin 1 "
Vanillin..... 1 "
Oil Rose..... 24 "
Oil Bergamot 8 "
Oil Neroli..... 8 "
Oil Geranium, French... 5 drops.
Oil Ylang..... 5 "
Oil Rhodium..... 2 "
Oil Sassafras 2 "
Oil Cinnamon..... 2 "
Oil Wintergreen..... 2 "
Oil Orris..... 1 drop.
Oil Bitter Almonds..... 1 "
Alcohol.....3,800 grs.

Triturate the ambergris and musk with a few drops of water, then add the alcohol, and finally dissolve the other ingredients.

Note.—French oil of geranium is the essential oil of *Pelargonium roseum* Willd. Oil of orris is a solid fat, consisting of myristic acid and a minute proportion of an essential oil. We presume the author means a quantity equal in size to a drop of the other oils.

Terebene Smelling Salts.

Terebene.....2 fl. dr.
Aromatic Spir. Ammonia.1 1/2 "
Chloroform.....10 ℥.
Oil Citronella..... 4 ℥.
" Patchouly.....2 drops.
Ammonium Carbonate (in No. 20 powder).....1 oz.
Carmine Coloring.....q. s.

Dissolve the two oils in the terebene, and add the chloroform; pour the mixture upon the carbonate of ammonium in a bottle, and lastly add the aromatic spirit of ammonia previously tinged with carmine coloring. The latter may be omitted, it being merely useful when it is desired to distinguish this preparation by its external appearance from any other.

The peculiar effects of terebene vapor, when respired, in relieving hoarseness, and when mixed with ammonia, of improving the voice generally, has led to the above formula being devised.—After *Brit. and Col. Drugg.*

Eau de Cologne.*

EUGEN DIETRICH, in *Pharm. Centralh.*, gives the following formulas:

Parts.
1. Oil Bergamot..... 10
" Lemon..... 5
" Rosemary, French, rect.... 5
" Neroli..... 8
" Cloves..... 1
" Ylang.....0.2
Acetic Ether..... 1
Diluted Acetic Acid..... 1
Alcohol.....825
Distilled Water.....150

Parts.
2. Oil Bergamot..... 10
" Lemon..... 5
" Rosemary, French, rect... 5
" Lavender..... 1
" Cloves..... 1
" Neroli..... 1
" Ylang.....0.1
" Wintergreen.....0.1
Acetic Ether..... 1
Diluted Acetic Acid..... 1
Alcohol.....825
Distilled Water.....150

3. Ammoniacal Cologne.

Parts.
Oil Bergamot..... 12
" Lemon..... 5
" Rosemary, French..... 2
" Neroli..... 1
" Lavender.....0.5
Water Ammonia.....0.2
Alcohol.....890
Distilled Water.....100

4. Cologne for Baths.

Parts.
Oil Bergamot..... 5
" Rosemary, French..... 5
" Lemon..... 3
" Citronella 1
" Sassafras..... 2
" Cloves..... 1
" Wintergreen..... 1
Ether..... 5
Acetic Ether..... 5
Alcohol.....800
Distilled Water.....200
Eosine.....0.02

The faint tint produced by the eosin imparts to the water of the bath a fine reddish tinge. A still better effect is produced by taking phenolphthalein in place of the eosin. This leaves the bath colorless, but the reddish tinge makes its appearance as soon as soap is used.

About 2 fluidounces are sufficient for one bath.

The Dry-Bread Cure is the latest craze, and it comes from Lindenweise. It consists of the cold pack, a diet consisting of dry bread, twice a week a little rice and barley, and three times a week Hungarian wine, all to continue for six weeks. It is said to be effectual in cases of rheumatism and gout (which we consider extremely doubtful in view of recent experience).

Sparteine sulphate has lately been recommended as a heart-tonic. Although Dr. Germain Sée, of Paris, thinks it superior to digitalis, Dr. F. C. Shattuck, of Boston, cites several instances that have come within his knowledge, in which the results following its use were inconclusive. The dose is given as 0.05 to 0.10 Gm. (= 1/2 to 1 1/2 grain.)

Another heart-tonic, strophanthin, may be used—when it can be had—in doses of 1/16 grain hypodermically.

Masking the Odor of Iodoform is accomplished, according to Oppler, by the admixture of freshly roasted coffee. Brunelli claims that a mixture of one part of finely powdered camphor with three parts of iodoform completely masks the odor of the latter.

* The *Pharmaceutische Centralhalle* gives a continuous series of formulae compiled or devised by Dietrich. The series is copyrighted and ought to be consulted in the original. The above are quoted as samples.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

We are indebted to Mr. D. S. White, of Flandreau, Dakota, for the following formula in answer to queries in our April number:

SUCOUS ALTERANS (McDade).

Fl. Ext. Sarsaparilla.....	ij.
" " Stillingia.....	ij.
" " Burdock.....	ij.
" " Phytolacca.....	ij.
Tr. Prickly Ash.....	i.
Elix. Aromatic, q. s.....	3 xvi.

Dose, 1 teaspoonful increased to a tablespoonful.

No. 1,711.—Cough Mixture for Horses (S. F. H.).

The correspondent incloses a formula from *The Farm and Hearth*, which was given in reply to a subscriber who wishes a remedy for his horse's cough. S. F. H. asks: "Would it not be liable to stop the cough too effectually for the owner's advantage?" The formula reads:

Hydrocyanic Acid.....	3 iv.
Powd. Ext. of Licorice.....	3 i.
Laudanum.....	3 ij.
Camphor Water.....	3 xv.

Mix, and give two ounces three times a day.

Dilute hydrocyanic acid is evidently intended. In fact, it is not customary to prepare an acid of a greater strength.

No. 1,712.—Hager's Catarrh Remedy (E. O.).

The formula recommended by Dr. Hermann Hager is as follows:

Carbolic Acid.....	10 parts.
Alcohol.....	10
Water of Ammonia.....	12
Distilled Water.....	20

Take two-ounce wide-mouthed bottles, fill them to one-third with the above liquid; then introduce a bunch of [absorbent] cotton of sufficient size to soak up all the liquid.

To be used in incipient cold in the head, coryza, chronic catarrh, etc.

A stronger preparation, also recommended by Hager, is the following:

Carbolic Acid.....	10 parts.
Oil of Turpentine.....	5
Water of Ammonia.....	12
Alcohol.....	20

To be used in the same manner as the preceding.

Hager recommends these as prophylactics against diphtheria. He advises all those who have to handle and be about patients suffering from diphtheria or phthisis to place a vial with this *olfactorium* to the nose when they approach the patient.

No. 1,713.—Ferrated Cod-Liver Oil (M. M.).

Ferrated cod-liver oil, containing a ferrous salt, may be prepared by dissolving ferrous oleate in cod-liver oil.

Ferrous oleate is obtained by double decomposition of ferrous sulphate (green sulphate of iron), and an alkaline oleate. The most convenient oleate is Castile soap. Take

Sulphate of Iron (ferrous).....	1 part.
Castile Soap, calculated as dry.....	1
Water.....	q. s.

Dissolve the Castile soap in 30 parts of hot water, and the sulphate of iron in the same quantity. Mix the solutions while hot, by pouring the iron solution into the soap solution, collect the precipitate, wash it with boiling water, and finally with hot alcohol.

Dry it as rapidly as possible. Remove from the exterior of the dry pieces the oxidized portion, and dissolve the remainder in cod-liver oil, so that 100 parts of the product contain 4 parts of the dry oleate of iron.

No. 1,714.—Salicylic Acid and Oil of Wintergreen (Drs. A. M. P. and D. F. D.).

Some years ago, a series of experiments made in one of the largest public hospitals of this city rendered it probable that there was a slight difference in therapeutic activity between the natural oil of wintergreen, from Gaultheria, and its double, the oil of birch. Subsequently another more careful series of trials were made, in which care was taken to experiment on one and the same person with both kinds of oils in different attacks of inflammatory rheumatism, or to select two different persons of as nearly similar condition as possible. As a result it was found that there appeared to be no difference between the two kinds of oil, which are identical chemically, except that the genuine oil of gaultheria contains a small quantity of a terpene which is absent (through bad management in distillation) in the other oil.

A recent report published in *The Lancet* contains a statement that the natural salicylic acid obtained from oil of wintergreen is much preferable to the artificial, which is prepared from carbolic acid. This statement appears to have had a more solid foundation some years ago when the commercial product, prepared under Kolbe's patent, was contaminated with some irritating by-product, first noticed by Williams, which could be removed by cautious sublimation or by dialysis. The process of manufacture has, however, been so much improved that the commercial acid now put on the market may be regarded as chemically pure. We have not heard any complaints about it for a long time.

Oil of gaultheria (or of birch) contains about 90 per cent of salicylate of methyl, $C_6H_5O_2$, mol. w. 152, which corresponds to 1 molecule of salicylic acid, $C_6H_5O_2$, = 138. Allowing 10 per cent of other constituents as being present in the oil, it will be seen that 138 parts of salicylic acid are represented by about 169 parts oil of wintergreen, or 100 parts of salicylic acid correspond to about 123 parts of oil of wintergreen.

No. 1,715.—Removing the Marks of Tattooing with India Ink (J. W. E.).

"Could you in your next issue give a formula or name a preparation for removing India-ink tattooing? I have used strong nitric acid, potassa, potassa cum calce, permanganate of potassa followed by hydrochloric acid and chlorinated lime."

No. So far as we are aware the marks are indelible. The pigment from which the ink is made is carbon, and no chemical agent will affect it. It might be possible to cause such separation and destruction of the deep layer of the skin as to remove it, but this would leave a scar, and is only to be recommended when the area is very small.

No. 1,716.—Elixir of the Phosphates of Iron, Quinine and Strychnine (W. S. & Co.).

This correspondent writes:

"Is there any objection to making Elixir Ferri Phos., Quininae, et Strychninae as follows, viz., by taking the Elixir Cinchonae et Ferri (No. 14 of the New York and Brooklyn Formulary), and adding a sufficient quantity of Liquor Strychninae (Br.) to give the necessary amount of strychnia to each dose. The elixir made in this way is permanent, and does not become dark."

We are much obliged to our correspondent for the suggestion, and will

bring it at once to the attention of the National Formulary Committee of the Am. Pharm. Assoc., which will make the necessary experiments in order to test the claim. If this will make the elixir permanent and will keep it from turning dark, it will be a great advantage. Up to the present time, however, the committee believes that the cause of darkening or of instability lies in another direction.

To give an opportunity to such of our other readers as are not in possession of the Brit. Pharm. to try the formula in the way suggested above, we append the formula for

Liquor Strychninae Hydrochloratis.

Solution of Hydrochlorate of Strychnine.

Synonym: Liquor Strychninae.

Strychnine, cryst.....	9 grains
Dil. Hydrochloric Acid.....	14 minims
Alcohol.....	1 fl. oz. (Brit.)
Distilled water.....	1 1/2 fl. oz. (Brit.)

Mix the hydrochloric acid with four drachms of the water and dissolve the strychnine in the mixture by the aid of heat. Then add the alcohol and the remainder of the water.

The above solution is intended to be of the strength of (about) 1 grain in 100 minims.

If this preparation is to be used in the elixir of the New York and Brooklyn Formulary, it would require 250 minims (British) to represent the 2 1/2 grains of strychnine. This solution contains a very minute proportion of acid. In the formula contained in the New York and Brooklyn Formulary (Nos. 23 and 24) the presence of acid has been purposely avoided, as this renders the preparations disagreeably bitter. Our correspondent, however, proposes to start with the elixir of Cinchona and Iron (formula 14). The complete working formula would then be:

Elixir of Iron, Quinine and Strychnine. (Or Elixir of Cinchona, Iron, and Strychnine.)

Phosphate of Iron, U. S.....	256 grs.
Citric acid.....	5 "
Boiling water.....	1 fl. oz.
Solution of Strychnine.....	250 min.
Compound Elixir of Quinine (No. 48) enough to make.....	16 fl. oz.

Of course, if a solution of strychnine is to be introduced at all, it will have to be adjusted so as to correspond to our weights and measures, that is, so that 250 of our minims contain 2 1/2 grains of strychnine.

No. 1,717.—Bromidia (Ch. L.).

The exact formula of bromidia is not known. It is alleged to contain "15 grains each of pure bromide of potassium and purified chloral, and 1 grain each of genuine imported extract of cannabis indica and hyoscyamus" in a fluidrachm. Dr. A. B. Lyons, of Detroit, examined it some three years ago (see *New Rem.*, 1883, 7), and found it to contain, in each fluidounce, about 10 1/2 grains of the bromide and 11 1/2 grains of chloral hydrate. The extract of cannabis indica could not be recognized in the mixture, as the resin, of which it is almost wholly composed, is insoluble in aqueous liquids, and was necessarily absent.

No. 1,718.—Gelatin Bougies (Cleveland).

In addition to the information given on page 158 of our last volume, we append the following extract from an article in the *Rundschau* (Prag):

As it is absolutely necessary to insure the escape of all air from the melted mass, it is essential to have the moulds in which the bougies are to be cast as hot as possible, which is best accomplished on a steam-bath. The following composition is said to work well:

Gelatin	20 parts.
Water.....	20 "
Glycerin	40 "

Dissolve, mix, and evaporate to 60 parts.

[This will produce a better result than the formula previously given by us, in which the quantity of glycerin is too large.]

When the mass is to be poured, it should possess the highest possible temperature attainable on the water-bath, and may with advantage be even raised a little higher over a naked fire, care being taken that the mass does not become burned, and that no skin forms on the surface. As soon as the moulds are filled, they are placed in cold water.

The bougies thus prepared are, however, rather soft; in fact, they may be wrapped around the finger; and this is a drawback.

French physicians prefer the bougies known as Reynal's, which are quite hard. According to Dorvault, they are made by casting a mixture of gelatin and gum arabic in moulds. But it is evident that Dorvault was mistaken in this. For, if a small piece broken off one of these bougies is held up against the light, the broken surface parallel to the observer's face, it will be seen that there is an internal square core of a dark color, surrounded by a light-colored mass of a circular outline. This exterior coat is very easily soluble, consists of sugar, and is medicated. The core is a square strip cut from tough jujube paste.

The bougies appear to be made by dipping the core into a warm concentrated solution of sugar containing the desired medicament, and holding it up to drain. The last drop falling from the end congeals to a transparent point. If one of these bougies is placed in water, it dissolves in it quite rapidly, the square interior core remaining behind and undissolved for many days.

No. 1,719.—Preserving Non-Alcoholic Beverages (Ch. L.).

This correspondent wants us to suggest a preservative for an orange wine containing no alcohol, but tartaric and citric acids, oil of orange, etc. He also wants to know whether salicylic acid could be used.

If the liquid is purely aqueous, as we infer from the above statement, the amount of salicylic acid which can be got into solution will be quite small, amounting to only about 3 grains for every 2 fluidounces. This quantity is not regarded as likely to be injurious. In fact, it is only in such beverages as are usually taken in larger quantities, and continuously or habitually—such as wine, beer, cider, etc.—that the propriety of the use of salicylic acid, as a preservative agent, has ever been questioned. Aside from salicylic acid, we know of no preservative agent that would combine the property of being innocuous, tasteless, or odorless, so as to be available for a delicately flavored beverage. Boric acid has been occasionally used for such purposes, but it is not by any means proven that it is harmless. Alcohol would, of course, be the best preservative, but, by the direct statement of our correspondent, this is excluded. Sugar would be the next; yet it is evidently not intended to make the preparation as sweet as a syrup.

If the wine is to be kept in tightly-closed bottles, we might suggest to pasteurize it, that is, to place the filled bottles into water, raise the water to boiling, and then to close them hermetically. Should any of the flavoring be thereby lost, it would be easy, just before corking, to introduce into each bottle a small quantity of alcoholic solution of oil of orange. The liquid in the bottles would probably acquire good keeping qualities in this manner, but it would not be quite clear; at least, a sediment would form in the bottles.

Possibly the whole bulk of the liquid might be heated at once, allowed to cool, afterwards filtered, and the filtrate again pasteurized, after being transferred to the bottles.

The last German Pharmacopœia has improved the keeping qualities of an otherwise troublesome preparation, namely, the vinous tincture of rhu-barb, by the addition of a small quantity of borax, which is not considered objectionable. Perhaps this might be tried in the present case.

No. 1,720.—Attaching Labels to Tin (Stockholm, Sweden).

This is one of the constantly recurring queries, and, as it has not been replied to in detail for some time, we will quote a number of the methods recommended or used for the purpose.

1. If the paper is well sized and will resume its original color when the paste is dry, use a solution of balsam of fir, 1 part in oil of turpentine, 2 or 3 parts.

2. Soften 1 part of good glue in water, then pour off the excess, and boil it with 8 parts of strong vinegar (about 8%). Thicken the liquid, while boiling, with enough of fine wheat-flour, or dextrin.

3. Make starch paste, and add to it, while warm, a little Venice turpentine, so that the latter will become evenly distributed through it.

4. Add to starch paste, or any other similar aqueous paste (except that made from gum Arabic) some solution of shellac in borax. The quantity may be easily determined by trial.

4. Paint the spot, where the label is to be put, with solution of tannin, and let it dry. Affix the label previously gummed and wetted.

6. Paint the spot over lightly with a camel's-hair or other brush dipped into chloride of antimony.

7. Make a dilute solution of white gelatin, or, better, of isinglass, about 1 in 20. This is said to adhere without the addition of anything else. We have not tried it.

8. To mucilage of acacia, starch, dextrin, or tragacanth-paste, add a little ammonia.

9. Or, add a little tartaric acid. A trifling of glycerin may be added besides.

10. Mucilage of gum Arabic may be rendered much more adhesive by heating 100 parts of it with 2 parts of sulphate of aluminium, previously dissolved in hot water, to boiling, and then allowing to settle. A little tartaric acid and some glycerin added to the clear liquid, after it is decanted, will improve it.

11. Make a mixture of mucilage of tragacanth, 10 parts; honey, 10 parts; and flour, 1 part. We have no experience with this.

12. Roughening the spot with fine emery paper, wiping the place clean, and then attaching labels with ordinary paste, or such as have been rendered more adhesive, is one of the surest ways we know of.

The difficulty of insuring the permanent adhesion of labels on tinned iron, or "tin," at it is usually called, has induced many manufacturers to abandon the use of plain tin-ware, and to substitute therefor the so-called japanned tin, which can be had (in plain tints) at almost the same price as the naked tin itself. There is no difficulty whatever encountered in making labels adhere to the japanned tin by any of the usual kinds of pastes.

No. 1,721.—Ichthyol (P. & S.)

This is originally the name of a peculiar product obtained from a bituminous rock found near Seefeld in the Tyrol. The bituminous rock is subjected to dry distillation in iron retorts, during which operation a tarry product of a very offensive odor is obtained. This separates, after a while, a thin-fluid dark-colored oil. The lat-

ter is treated with sulphuric acid, whereby sulphurous acid is set free, and the substance converted into a compound sulphuric acid. This is finally neutralized with soda, ammonia or another base. The resulting salt contains about 10% of sulphur in combination (as a sulpho-acid). At first the name ichthyol was restricted to the acid substance itself. Subsequently, when the neutralized acid, in the shape of sodium salt, became more generally known, it was quite usual to see the term ichthyol applied to this. And recently, since the ammonium salt has come into use and almost entirely displaced the sodium salt, we see the name ichthyol applied to denote the *sulpho-ichthyolate of ammonium*.

As an example of a preparation of this salt we give the following formula for

Ichthyol Paste (Unna).

Sulpho-ichthyolate of Ammonium.....	1 to 3 parts.
Water.....	10 "
Glycerin.....	10 "
Dextrin	10 "

Used by Dr. Unna as a rapid-drying agent in all varieties of intertrigo, in slight eczemas of the face and hands where a fatty application would not be borne, and in extensive superficial eczemas.

The ammonium salt above mentioned is thus characterized by the Pharmacopœia Committee of the German Pharm. Association:

[AMMONII SULPHO-ICHTHYOLAS.]

(Ammonium Sulpho-ichthyolicum.)

Sulpho-ichthyolate of Ammonium.

A reddish-brown, clear, syrupy liquid of an empyreumatic, bituminous odor and taste. When ignited, it swells up to a voluminous carbonaceous mass, finally being wholly volatilized. Water dissolves it to a reddish-brown liquid of a faintly acid reaction; it is also soluble in a mixture of equal volumes of alcohol and ether. In pure alcohol or ether it is only partially soluble. Petroleum benzin dissolves but little of it. The aqueous solution, when treated with hydrochloric acid, separates a dark resinous mass, which, when separated, is soluble both in ether and water. From its aqueous solution, however, it is again separated by hydrochloric acid or chloride of sodium. On mixing sulpho-ichthyolate of ammonium with solution of potassa, vapor of ammonia is evolved; this solution, when evaporated and the residue ignited, furnishes a liver-brown charcoal giving off hydrosulphuric acid gas when treated with hydrochloric acid.

No. 1,722.—Wine of Coca (L. L. A.).

Any attempt to prepare Wine of Coca from the fluid extract is likely to prove a failure, because the menstruum used in preparing the fluid extract dissolves out of the leaves some of a bitter resinous matter which is medicinally inert. A good deal of this may be gotten rid of by diluting the fluid extract with water, filtering and evaporating. But some of it will remain. The best way to prepare a Wine of Coca is no doubt the direct one of exhausting the leaves directly with wine. Such formulæ have been proposed at different times. The following is believed to yield a good product:

Coca leaves, in fine powder..	2 av. oz.
Sherry Wine.....	q. s.
Simple Elixir (New York and Brooklyn Form.)	2 fl. oz.

Moisten the Coca with sherry wine (a good quality of California sherry is preferable to the cheaper imported sherries for making such pharmaceutical preparations), pack it in a percolator, and percolate until 14 fluid ounces have passed through. Mix this with the Simple Elixir.

A formula of Wine of Coca will be proposed by the committee preparing

a draft for the National Formulary of Unofficial Preparations to be laid before the next meeting of the American Pharmaceutical Association. As the formula has not been definitely settled, and there is no other authority to go by, you may use your own judgment as to the flavoring or sweetening of the "wine."

No. 1,723.—Formulas of Proprietary Medicines (Subscriber).

We are asked to state whether a law has been passed compelling the manufacturers of proprietary medicines to place their formulas on the labels.

In reply we have to say that such a law has not been passed in any State in this country. But at the last meeting of the American Pharmaceutical Association, the report of the Committee charged with an inquiry into the traffic with proprietary medicines was read, in which it was recommended to approve of the draft of a law which should enforce, not the publication of the formulas of the different preparations, but only the *names* of the constituents, and if any of these belong to the class of poisons, or "potent medicines," declared so by a legal authority, then the *quantity* of this potent medicine contained in the preparation should also be stated. These propositions appeared to receive the support of a majority of the members present at the meeting, but it is doubtful whether more than a very small number really understood the matter in all its bearings, as they had not had a previous opportunity to examine the document at leisure. After the meeting the report was discussed in the pharmaceutical press and at pharmaceutical meetings, but no definite steps have been taken to carry the plan into operation. So far as the Association is concerned, it was never contemplated that the approval of the Committee's report should be immediately followed by an actual carrying out of their plan. It would have been unwise to have done so. The question is very important, and needs to be well discussed before an intelligent conclusion can be reached.

No. 1,724.—Estimation of Diastase in Extract of Malt ("Malt").

Extract of malt may be assayed for the quantity of diastase it contains in the following manner:

Heat 2 Gm. of air-dry starch with 10 C.c. of very dilute hydrochloric acid, containing about $\frac{1}{10}$ of HCl, and with 60 C.c. of water in a closed vessel for thirty minutes on a water-bath, agitating frequently. Neutralize the liquid with very dilute ($\frac{1}{10}$) solution of soda, and make up the volume to 100 C.c. Now make a solution of the extract in water, using at first a solution of 1 Gm. of the extract in 19 C.c. of water (making 20 C.c. in all). Take 10 test-tubes, put into each 10 C.c. of the starch solution, and add to the first 0.1 C.c. of the solution of extract of malt; to the second, 0.5 C.c.; to the third, 1 C.c.; to the fourth, 1.5 C.c.; to the fifth, 2 C.c., and so forth, adding to each succeeding one $\frac{1}{2}$ C.c. more of the solution of extract of malt, and set the whole series aside at the ordinary indoor temperature. Now add to the contents of each test-tube 5 C.c. of Fehling's solution, and set them all into a beaker containing boiling water, or in which water is being boiled. The Fehling's solution will thereby become reduced more or less, and should any of it remain undecomposed, that is, should the amount of Fehling's solution added to any one turn out to be in excess, which would be shown by the liquid (after the precipitate has settled) having a bluish tinge, then all test-tubes containing weaker malt solutions may be disregarded. On the other hand, should the Fehling's solution be completely reduced by any one

sample, which would be shown by the supernatant liquid being colorless, then any stronger malt solution may be disregarded. The samples now available for the closer determination of the diastase are those which lie between that which yields a bluish-colored liquid and that which gives a colorless liquid. A new series of test-tubes is now arranged, which are charged as before with starch solution, but the quantity of malt solution to be added begins at the first test-tube, with the amount previously found to yield a final blue liquid, and in each succeeding test-tube a quantity increased by 0.1 C.c. is introduced. Should the series of ten test-tubes be insufficient to receive samples, increasing by 0.1 C.c., and ranging between the two limits previously determined, a correspondingly larger quantity (0.2, 0.3 C.c., etc.) may be used, and, if desired, a third series may afterwards be examined with intervals of 0.1 C.c. The point to decide is this: Which is the test-tube in which the 5 C.c. of Fehling's solution have been completely reduced by the glucose present in the liquid in the test-tube, without there still being an excess of glucose? It may be assumed that it is that test-tube containing a colorless liquid (over the settled precipitate) which immediately follows one in which a faint blue tint, from undecomposed Fehling's solution, is still perceptible.

It is generally stated that 1 part of pure diastase can convert 2,000 parts of starch into glucose (best at 75° C., or 167° F.). Yet the effect of diastase is not completed when it has converted a certain amount of starch into sugar, though it may apparently cease to perform further work. If the solution be diluted, or if more time is given, it will still continue to act. Hence, when testing the diastatic percentage of an extract of malt, time, temperature, and the degree of dilution must be taken into consideration. And it would seem that the following conditions, if carefully observed, will lead to uniform results:

1. The temperature of the solution of starch, of the malt solution, and of the air of the workroom during the experiment, should be between 75 and 85° F.

2. The test-tubes should be heated precisely ten minutes, being all immersed at the same time into a beaker having a layer of sand at the bottom, and containing boiling water.

It is not possible, with any degree of certainty, to state that such and such an extract of malt has so much (not more and not less) of diastase. But its diastatic power can be expressed by stating the quantity of starch which a certain amount of it (say 100 parts) can convert into sugar.

No. 1,725.—Pot-pourri (S. B.).

This compound, made of a mixture of sweet-scented flowers, salt, and powdered orris root, can best be prepared only where there is an abundance of plants yielding odoriferous leaves or flowers available. Of course, there are many favored spots in this country where this may be done; yet the best compounds of this nature are put up in southern France, where almost any desired ingredient is freely available.

A formula said to be used in France is as follows:

Take of the fresh petals of the pale and red rose, pinks, violets, moss rose, orange flower, lily of the valley, acacia flowers, clove gilliflowers, mignonette, heliotrope, jonquils, with a small proportion of the flowers of myrtle, balm, rosemary, and thyme; spread them out for some days, and, as they become dry, put them into a jar, with alternate layers of dry salt mixed with powdered orris root, till the vessel is filled. Close it for a month and

stir the whole up; then dampen it with rose water.

The above mixture may, of course, be varied in many ways. Many women in southern France prepare such compounds for home use, and each uses such constituents as are most readily accessible.

A little ground or finely rasped East India sandal-wood, or a little East Indian sandal-wood oil, and a very small proportion of tonka bean (best after being extracted with alcohol, so as to retain only a trace of odor) are said to make the odor of such compounds more lasting.

No. 1,726.—Compound Syrup of Hypophosphites with Iron, Quinine, Strychnine, and Manganese (Louisville).

You are probably of the same opinion as ourselves when we declare a mixture, such as the above title implies, as unscientific, incongruous, and of uncertain utility. Yet we are well aware that such compounds are quite frequently called for, and even prescribed by physicians, and that the pharmacist is compelled to supply the demand. This fact has been generally recognized, and has led to the establishment of local committees, who were to bring about, if possible, some uniformity in these unofficial preparations. At the next meeting of the Amer. Pharm. Association, to be held in Providence, the draft of a national formulary will be offered, which is partly based on the present New York and Brooklyn Formulary—a work that has helped the pharmacists in this and even more remote sections of the country to get rid of much of the annoyances they had previously to deal with. The committee which prepared this work, recognizing the fact that there was a popular and much advertised syrup of hypophosphites (known by the manufacturer's name) in the market which pretended to contain certain ingredients—the presence of which is not denied here—concluded to devise a formula which would enable the physician to know how much of each constituent the preparation contained, and on the basis of which he might judge whether he ought to use it or not.

Having made these prefatory remarks—which are incidentally intended for some others among our readers with whom we have recently corresponded on the subject—we quote the formula from the New York and Brooklyn Formulary, where it will be found under the simplified title:

SYRUPUS HYPOPHOSPHITUM COMPOSITUS.

(Compound Syrup of Hypophosphites.)
(Compound Hypophosphites.)

Hypophosphite of Calcium	... 256 grains.
" of Potassium	... 128 "
" of Sodium	... 128 "
" of Manganese	... 16 "
Solution of Hypophosphite of Iron	... 96 min.
Sulphate of Quinine	... 8 grains.
Fluid Extract of Nux Vomica	... 30 min.
Sugar	... 12 av. oz.
Water	... 7 fl. oz.
Hydrochloric Acid	... q. s.
Syrup, enough to make	... 16 fl. oz.

Dissolve the solid hypophosphites in the water, add the sugar, and shake until it is dissolved. Mix the sulphate of quinine with about 1 fl. oz. of the solution, and add enough (about 3 drops) of hydrochloric acid to dissolve it. Then mix it with the rest of the solution, add the solution of hypophosphite of iron and the fluid extract, and, finally, enough syrup to make 16 fl. oz.

Each fluidrachm contains 2 grains of hypophosphite of calcium, 1 grain each of hypophosphite of potassium and sodium, $\frac{1}{2}$ grain each of hypophosphite of iron and manganese, and smaller quantities of bitter alkaloids.

The solution of hypophosphite of iron meant is that prepared after the

same Formulary (No. 32, p. 65), of which you had better procure a copy.

No. 1,727.—Iodol Solution (S. B.).

Mazzoni directs the following proportions for making a standard solution, to be used as an antiseptic either by itself, or for saturating gauze with it:

Iodol.....	1 part
Alcohol.....	16 parts
Glycerin.....	34 "

No. 1,728.—"Liebig's Coca Beef Tonic" (A Reader).

We do not know either the formula for, nor the mode of preparing this article. Can any of our readers furnish them?

No. 1,729.—Pharmaceutical Still (D. S. W.).

You will find the advertisement of Dr. L. Wolff in this number.

Formulæ Asked for.—We have inquiries after the formulæ of the following, which some of our readers may be able to supply:

1. Kendall's Spasm Cure.
2. McClintock's Lotion.
3. Schenck's Mandrake Pills.

BIBLIOGRAPHY.

PRACTICAL HUMAN ANATOMY. A Working-Guide for Students of Medicine, and a Ready Reference for Surgeons and Physicians. By FANEUIL D. WEISSE, M.D., Prosecutor (1863 to 1865) to the late Valentine Mott, M.D., LL.D., Professor of Practical and Surgical Anatomy, Medical Department of the University of the City of New York. Octavo, 222 lettered plates containing 321 figures. Extra muslin, \$6.00; leather, \$7.00. New York: William Wood & Co., pp. 456, Royal 8vo.

It would be difficult to conceive of a more perfect working-guide for the dissector than this. The author has been engaged for many years in its preparation, and has had the services of a very accomplished draughtsman; the result is a work that is thoroughly original, and remarkably elaborate in its details.

COCA, COCAINE, AND ITS SALTS; their History, Medical and Economic Uses, and Medicinal Preparations. By WILLIAM MARTINDALE, F.C.S., Late Examiner of the Pharmaceutical Society, and Late Teacher of Pharmacy and Demonstrator of Materia Medica at University College, Joint Author of the Extra Pharmacopœia. London: H. C. Lewis, 136 Gower st., W. C. 1886, pp. 69.

THIS gives a very comprehensive review of the literature of coca, and is illustrated by a chromo-lithograph showing the botanical characteristics of the drug. In the construction of the book, the hygiene of the eye has been duly regarded in using blue ink on green paper.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION at the thirty-third annual meeting, held at Pittsburg, Pa., Sept., 1885. Also the Constitution, By-laws, and Roll of Members. Philadelphia: Published by the Association, 1886, pp. 694, 8vo.

IN addition to the usual lists of officers and members, the work contains a complete report of the proceedings, including reports and papers, and, in an appendix, the text of New York and Brooklyn Formulary of unofficial preparations, covering 29 pages. The frontispiece is an excellent portrait of the late Henry B. Parsons. The whole is a creditable piece of work and should be coveted by every pharmacist who is not already a member of the association.

A COMPEND OF PHARMACY. By F. E. STEWART, M.D., Ph.G., etc. Based upon Prof. Joseph P. Remington's "Text-Book of Pharmacy." Philadelphia: P. Blakiston, Son & Co., 1886, pp. 196, 12mo. Cloth, \$1.00; interleaved, \$1.25.

THE author is already well known as a writer on subjects allied to pharmacy. He has condensed in the compass of a book which will fit the pocket a great variety of material in such shape as to render it very useful for the student as a means for finding what he does not know.

THE PRINCIPLES AND PRACTICE OF SURGERY. By FRANK HASTINGS HAMILTON, A.M., M.D., LL.D., etc. Illustrated with 472 engravings. Third edition, revised and corrected. New York: William Wood & Co., 1886, pp. 989, 8vo.

THIS well-known treatise by one of the masters of American surgery is characterized by its conservative views and the authority which is acquired from the long experience of its author. The most considerable additions relate to the chapters on Anæsthetics and the art of primary union which have become so essential in the surgery of the period.

(1.) **DISEASES OF THE SPINAL CORD.** By BYROM BRAMWELL, M.D., F.R.C.-P. (Edin.), etc. 53 colored plates, and 102 fine wood engravings. Second edition. New York: William Wood & Co., 1886, pp. 298, 8vo.

(2.) **INSANITY AND ITS TREATMENT.** Lectures on the Treatment, Medical and Legal, of Insane Patients. By G. FIELDING BLANDFORD, M.D. (Oxon.), etc. Third edition. Together with Types of Insanity. An illustrated guide in the Physical Diagnosis of Mental Disease. By ALLAN McLANE HAMILTON, M.D., etc. New York: William Wood & Co., 1886, pp. 379, 8vo.

(3.) **HANDBOOK OF PRACTICAL MEDICINE.** By DR. HERMANN EICHHORST, Professor of Special Pathology and Therapeutics, and Director of the University Medical Clinic, in Zurich. Volume I.: Disease of the Circulatory and Respiratory Apparatus. 103 wood engravings. New York: William Wood & Co., 1886, pp. 407, 8vo.

(4.) **THE GENUINE WORKS OF HIPPOCRATES.** Translated from the Greek with a Preliminary Discourse and Annotations. By FRANCIS ADAMS, LL.D., Surgeon. In two volumes. Vol. I. New York: William Wood & Co., 1886, pp. 390, 8vo. With two plates.

THE four volumes, above enumerated, belong to the current series of Wood's Library of Standard Medical Authors. They thoroughly justify the title of the series in the high character of the works selected for republication in this form, and there has been no apparent saving in expense in making each volume a credit to the art of book-making. The number of illustrations is in itself remarkable as compared with the medical works of only a few years since, and their quality is all that could be desired for the purpose.

CALENDAR OF THE UNIVERSITY OF MICHIGAN for 1885-6. Ann Arbor: Published by the University, 1886.

THIS 8vo pamphlet of 207 pages is a complete directory to all the departments of the University and contains all useful information for those who desire information respecting the courses of education, terms, etc.

Pamphlets Received: Variations de Compositions et Réactions Chimiques des Humeurs Normales et Morbides de l'Appareil Génital de la Femme. DR. P. MÉNIÈRE (d'Angers). Paris, 1885, pp. 29, 8vo.—The Introductory Address of the Fifth Lecture Course at the Albany College of Pharmacy. Delivered Oct. 5th, 1885, by WILLIS G.

TUCKER, M.D., Professor of Chemistry. Albany, 1885. Published by the class, pp. 14, 8vo.—The Inertia of the Eye and Brain. By JAMES MCK. CATTELL (Reprinted from *Brain*), pp. 20, 8vo.—Sanitary Engineering. By WILLIAM CAIN. Third edition. Raleigh, N. C., 1885 (Extract from Report of State Board of Health), pp. 90, 8vo.—Sketch of the Botanical Work of the Rev. Moses A. Curtis, A.M., D.D., F.A.A.S. By THOMAS F. WOOD, M.D. Raleigh, N. C., 1885, pp. 31, 8vo. With portrait.—Plan de Reforma de la Enseñanza Oficial y Libre de las Ciencias Biológicas. By DR. D. IGNACIO VALUETI y Vivo. Barcelona, 1885, pp. 32, 8vo. (Thesis.)—Die Alte und die Neue Medizin. By Dr. Mariano Semmola, of Naples. Translated by PROF. DR. VINCENTZ MEYER. Naples, 1885, pp. 187, 8vo.

New Books.

Binz, Prof. Dr. C. Vorlesungen über Pharmakologie. Für Aerzte und Studierende. Complete 3 in 3 parts (last just out). 8vo, Berlin. 22 marks.

Dammer, O. Kurzes chemisches Handwörterbuch (second edition). 8vo, Stuttgart. (In about 12 numbers) à 1 mark.

[An indispensable work of ready reference, containing all that is essential, without going into minute details.]

Dupre, A. A Short Manual of Chemistry. 8vo, London, 1886. 7s. 6d.

Dorvault's L'Officine. The eleventh edition of this well-known work, edited by Frédéric Wurtz, has just appeared.

Eidherr, Ed. Der chem.-techn. Brennerleiter. 8vo. Wien (Hartleben). 3 marks.

Fischer, Dr. Bernhard. Lehrbuch der Chemie für Pharmaceuten. 8vo, Stuttgart, 1885. (94 illust.) Pp. 710. 13 marks.

PERSONAL.

John Farr Weightman, M.D., of the firm of Powers & Weightman, died in Philadelphia, May 6th, at the age of 41 years. Since 1874 he had charge of the quinine department of the firm. He had been an invalid for several years, and although a constant sufferer, had been able to continue his work until a short time before his death.

Paul Fritzsche, of the firm of Fritzsche Brothers, of New York, importers of essential oils, died in New York of Bright's disease on Friday, May 7th, at the age of 39 years, after a short illness. The house was established in 1870 as a branch of the Leipzig firm of Fritzsche, Schimmel & Co.

Dr. Don Ricardo de Sadaba y Garcia del Real is the recently appointed Professor of Practical Pharmacy in the Faculty of Pharmacy, of Madrid, Spain.

Dr. Don Joaquin Barnet y Ruiz, Professor in the Faculty of Pharmacy of the Royal University of Havana, Cuba, lately died in consequence of extensive burns caused by explosion of ether in his laboratory.

Dr. Plannellas Llanos, Professor of Botany and Zoology in the Royal University of Havana, is dead. He was a Knight of the Order of Charles III., and had greatly improved the condition of the botanic garden connected with the university, and died at an early age.

Mr. Melseus, a distinguished French chemist, and member of the Academy of Sciences, has lately died. He was the author of several discoveries: among others the curative effect of iodide of potassium in poisoning by mercury or lead, for which the Institute of France awarded him a prize.

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Whole No. 145.

CAUSE OF THE DETERIORATION OF COMMERCIAL CHRYSAROBIN.*

BY CHARLES RICE, PH.D., OF NEW YORK.

"Dermatologists have lately complained that the chrysarobin at present dispensed or sold does not appear to have the effect or strength which it had some five or six years ago. One prominent authority informs the Committee that he is compelled to treble the quantity to produce the same effect as has been produced formerly. To what cause can this deterioration in effect be ascribed?"

A FULL reply to this question, which was referred to the writer by the Association, cannot be submitted at the present time, chiefly because authentic specimens of the crude material, Goa powder, promised from South America, have not yet come to hand. Nevertheless a partial answer may be made, based upon the reported experience of various observers.

In the first place, there is no doubt whatever that dermatologists have lost confidence in the quality of the chrysarobin at present supplied, which seems to be very much weaker in its action than that furnished in former years, or even than Goa powder itself. Numerous authorities have put themselves on record, regarding this matter, in the recent medical literature.

It is well known that Goa powder (araroba, pó de Bahia) and the proximate principle chrysarobin (often misnamed chrysophanic acid) prepared from it have been used for the purpose of setting up an artificial specific irritation or inflammation of the skin, which, when produced on surfaces affected with herpes circinatus, psoriasis, intertrigo, and certain other forms of skin disease, often results in subduing and removing the latter, though it is sometimes accompanied by disagreeable consequences.

An answer to the question why the chrysarobin at present supplied does not possess the activity of that of former years involves the study of several subordinate points, particularly the following:

1. In what does the chrysarobin at present supplied differ from that of former years?

2. Is the chrysarobin of the present market prepared by the same method as formerly?

3. Is the Goa powder of the present market of the same character as that supplied some years ago?

4. Is there not some substance in Goa powder which is more active than the chrysarobin extracted from it, or which at least intensifies its action?

The first point can only be decided by actually comparing samples of old and of fresh chrysarobin. If a specimen of the former (about ten years old) should be in the possession of a member of the Association, he would greatly oblige the writer by sending it to him. At present no such sample is available.

Regarding the second point, it is known that chrysarobin is extracted from Goa powder by exhausting it with boiling benzol, and, after concentration of the solution, allowing it to crystallize from the latter. This is, at least, the general outline of the process, the details employed by the few manufacturers engaged in preparing it not being known.

The third point should be studied in connection with authentic samples of

Goa powder obtained from sources outside of the influence of trade interests. Steps have been taken to procure these, but up to the present no specimens have been received. (The commercial Goa powder is not suitable for such investigations, as it is not above suspicion.) Hence no attempt has been made to follow up this question.

Finally, regarding the last mentioned point, we are in a position to give a partial reply, more in the form of a surmise, however, than as a definite answer. It has been a standing complaint with manufacturers having to handle Goa powder, that whenever this substance has to be milled or bolted, or was otherwise diffused in dust, the workmen coming in contact with it were invariably affected with a more or less severe inflammation of the eyes, lasting for several days. On the other hand, it has been noticed during late years that the dust of chrysophanic acid, diffused in the same way, produces only a compara-



Allen's apparatus for estimation of nitrites.

tively feeble inflammation. It was, therefore, natural to suspect that Goa powder might contain some substance still more active than chrysarobin, and this is rendered highly probable by a recent report made by the well-known house of Gehe & Co., of Dresden, to the effect that the mother-liquid left after the crystallization of chrysarobin, when evaporated, left behind an amorphous substance which was experimented with by Dr. Lesser, of Leipzig, and which appears to contain a principle considerably more active than chrysarobin.

The short time which has elapsed since the writer has received this information, has made it impossible to follow the subject further in time to report at this meeting of the Association. Should there be an opportunity of continuing the investigation, upon the arrival of the expected samples, the results will be communicated subsequently.

THE PREPARATION OF SPIRIT OF NITROUS ETHER FROM COMMERCIAL "CONCENTRATED NITROUS ETHER."*

BY WILLIAM SIMONSON, OF SPRINGFIELD, OHIO.

"Is it advisable to make Sp. *Ætheris Nitrosi* from the 'Concentrated Nitrous Ether' of the market?"

AT the last revision of the U. S. P. the formula for making this preparation was radically changed. In the older process all the volatile condensable products of the distillation were retained in the finished article; in the newer one the principal product (ethyl nitrite) is partly freed from other products by washing with cold water, and is then dissolved in nineteen parts of alcohol. Acting on the plan of this formula, the manufacturing chemist carries the operation to the preparation of the washed ether, and places the product on the market under the name "Concentrated Nitrous Ether."

For commercial reasons this article has come into extensive use, and inquiry into the strength of the brands most largely sold is proper. The object of the present investigation is the percentage of ethyl nitrite, or, rather, of total nitrites. Of the many methods and reactions employed for this purpose, the most trustworthy are those involving the generation and measurement of nitric oxide. Two such assay processes are in use, Eyckman's and Allen's. The latter of these was chosen, as the results obtained by its use are higher and more constant, and because, owing to its easy and rapid execution, it is the one that will come into use by those pharmacists who employ any process whatever.

The form of nitrometer best suited to this use is a straight tube graduated in one-tenth C.c. for 10 C.c. above and 50 C.c. below the stop-cock, which is placed about one-fifth the length of the tube from its upper end. It is connected by a rubber tube of equal length to a reservoir having the same length and capacity as the nitrometer; both being mounted so that either may be raised or lowered quickly and easily. In making estimations, the opening in the stop-cock and space below are filled with mercury by elevating the reservoir. The opening having been closed, the reservoir is lowered a few inches and the spirit measured in above the stop-cock. Having been allowed to pass into the lower limb, the spirit adhering to the walls of the tube is washed in by 2 C.c. of water in several portions, 5 C.c. of a saturated solution of potassium iodide (free from carbonate) is next passed in, followed by an equal volume of dilute sulphuric acid. As the reaction proceeds, the reservoir may be lowered or the nitrometer raised so as to keep the mercury near the same level in both; when nearly finished, the nitrometer is detached, vigorously shaken, and replaced in its support. A repetition of this treatment is necessary, and is almost always sufficient. The liquid beneath the gas has sp. gr. about 1.17, and is counterbalanced by a solution of sodium chloride of the same sp. gr. The mercury surface in each tube having been kept at the same level, the gas will come to a constant volume in about twenty minutes, and is then read off. The percentage of ethyl ni-

* Read at the meeting of the N. Y. State Pharm. Assoc., in reply to query No. 40.

* Read at the meeting of the Ohio Pharm. Assoc. in answer to query No. 31, and awarded the first prize by the Committee on Prize Essays.

trite is obtained by the following equation, which allows corrections for temperature and pressure:

$$\frac{\text{No. C.c. gas} \times .3185 \times \text{observed pressure in MM.}}{\text{No. C.c. spirit} \times \text{sp. gr. of spirit} \times 760} = \frac{\text{C}_2\text{H}_5\text{NO}}{\text{C}_2\text{H}_5\text{NO}_2}$$

At other temperatures the following values replace .3185:

10°C. = .241	14°C. = .3196	18°C. = .3153	22°C. = .3109
11°C. = .3280	15°C. = .3185	19°C. = .3141	23°C. = .3099
12°C. = .3218	16°C. = .3174	20°C. = .3130	24°C. = .3088
13°C. = .3307	17°C. = .3163	21°C. = .3120	25°C. = .3078

In estimating the quantity of ethyl nitrite in commercial nitrous ether, the first step is to make an accurate alcoholic dilution. Two methods may be used, the second being as accurate and more convenient and the one employed in making the tabulated assays. A 50-Gm. sp. gr. flask is nearly filled with alcohol, weighed, about 1.5 C.c. of the ether, cooled to near 0° C., added, its weight found by again weighing; then bringing the mixture to 15° C., adding alcohol until the graduated mark is reached, and again weighing. The last weighing gives the sp. gr. This dilution must be used at 15° C., or very near it, or the variation due to expansion or contraction will overcome the error of experiment. By the second method the sp. gr. flask is replaced by a narrow-necked volumetric flask holding 50 C.c. The dilution is made in the same manner, the first adjustment being made at the temperature at which the dilution is to be used. This avoids the error due to expansion or contraction, and does not require that the sp. gr. be known. In making assays the volume of spirit used is best measured by a narrow 5 C.c. pipette, graduated in $\frac{1}{10}$ C.c., the tip pressing into the opening of the stop-cock, and the mercury level lowered as fast as the spirit enters. With care, duplicate assays may be made to accord within less than one-half of one per cent, and seldom approaching one per cent, of the contained ether. The assay is then finished in the manner described. The volume of gas having been observed, its equivalent in the dry state at 0° C. and 760 Mm. pressure is found by the following equation:

$$\frac{\text{No. C.c.} \times 273 \times (P - V)}{(273 + T) \times 760} = \text{volume,}$$

P = observed pressure.
T = temperature.
V = vapor tension at operating temperature, assumed to be that of water.

A further correction for solubility of the gas must be made. As quoted from the original paper of the author of the process by several American pharmaceutical journals, 1.5 C.c. is dissolved by the mixed liquids in the nitrometer tube. As a strong brine was employed instead of mercury, the volume of liquid that absorbed gas was probably variable and is not definitely stated, but is left to inference, and is supposed to be about 15 C.c. In the assays made for this paper, the volume of liquid in the nitrometer was always 17 C.c., or very little less.

The correction for solubility in this volume of liquid was found by using for two estimations exactly the same quantity of ethyl nitrite, but in the second an increased quantity of absorbing liquid. The difference in the two volumes of nitric oxide is taken as the solubility of the gas in the quantity of liquid denoted by the increase. Two trials showed practically the same solubility, and further assays gave very nearly the same result. The method is objectionable, as involving the error always attending the assay process, but has the merit of having been made under *precisely* the same conditions as the working assays themselves. The figures adopted are, for the reason given, only approximate:

No.	Maker.	Gm. in 100 C.c.	C.c. used.	Temperature.	Barometric Pressure.	C.c. No. Observed, Corrected.		Per cent C ₂ H ₅ NO ₂ .	Per cent claimed or indicated.	Dilution Directed.	Per cent C ₂ H ₅ NO ₂ in Spirit.
1	A	3.192	3.53	24° C.	752.8	33.6	30.25	90.20	90	1x19	4.5
			3.53			33.5	30.17	89.97			
		2.707	4.07			32.7	29.46	89.94			
			4.00			32.0	28.85	89.52			
2	A	3.211	3.52	20° C.	751.8	33.7	31.01	92.19	90	1x19	4.6
			3.50	19° C.		33.2	30.60	91.51			
		3.860	3.63	18° C.	752.6	35.9	33.23	91.54			
			3.52	17° C.		34.5	32.12	91.25			
3	A	3.365	3.50	17° C.	752.6	33.8	31.47	89.78	90	1x19	4.5
			3.55	34.2		31.87	89.64				
		3.050	3.52	18° C.	750.3	31.1	28.77	90.04			
			3.51	31.0		28.69	90.04				
4	B	4.795	3.51	19° C.	751.8	32.1	29.61	59.11	U. S. P.	1x19	3.0
			3.50	18° C.		31.8	29.47	59.00			
		5.530	3.51	19° C.	753.6	37.0	34.12	59.06			
			3.52	20° C.		37.0	33.97	58.64			
5	B	3.634	4.04	19° C.	752.3	27.8	25.74	58.91	U. S. P.	1x19	3.0
			4.05	27.8		25.74	58.76				
		3.692	4.00	28.0	25.92	58.97					
			4.00	28.0	25.92	58.97					
6	C	2.536	4.05	19° C.	755.6	15.6	14.75	48.24	U. S. P.	1x19	2.4
			4.15	15.9		15.08	47.98				
		4.832	4.00	19° C.	754.4	29.6	27.54	47.87			
			4.00	29.4		27.27	47.41				
7	D	5.968	4.05	18° C.	751.8	21.35	19.95	27.69	U. S. P.	1x19	1.4
			4.05	17° C.		21.1	19.84	27.58			
		5.102	4.00	20° C.	757.0	18.2	17.07	28.10			
			4.00	18.0		16.90	27.82				
8	E	5.064	4.02	18° C.	760.0	14.7	14.08	23.28	No Claim	1x10	3.12
			4.00	14.5		13.90	23.05				
		5.063	4.05	18° C.	760.0	14.8	14.17	23.22			
			4.05	19° C.		14.8	14.11	23.12			
9	F	Undiluted	5.00	19° C.	751.8	3.15	3.42	.260	U. S. P.	1x19	.013
		Sp. Gr. .883	5.10			3.20	3.47	.259			
10	F	Undiluted	5.00	17° C.	757.0	7.40	7.38	.570	U. S. P.	1x19	.0285
		Sp. Gr. .870	5.00			7.35	7.33	.565			

TEMP. = 20° C. PRESSURE = 757 Mm.

Spirit used.	Volume of Gas.	Volume of Liquid.
1st. { 2.00 C.c.	21.95 C.c.	10 C.c.
{ 2.00 C.c.	21.50 C.c.	23 C.c.
.45 C.c. gas soluble in 12 C.c. liquid.		
2d. { 2.00 C.c.	21.90 C.c.	10 C.c.
{ 2.00 C.c.	21.50 C.c.	21 C.c.
.40 C.c. soluble in 11 C.c. liquid.		

23 C.c. of liquid dissolves 0.85 C.c. gas, or 17 C.c. dissolves .63 C.c., equalling 0.57 C.c. dry gas at 0° C. and 760 Mm. pressure. This volume is added to the observed volume after their correction. 0.336 Gms. $\text{C}_2\text{H}_5\text{NO}_2$ yield 100 C.c. NO at 0° C. and 760 Mm. pressure. On this is based the equation:

$$\frac{\text{Cc. NO} \times .336}{\text{wt. of ether used}} = \text{per cent } \text{C}_2\text{H}_5\text{NO}_2 \text{ in that ether.}$$

An example will fully explain all calculations:

No. 1: 3.192 in 100 C.c., 24° C., 752.8 Mm.
1st assay — 3.53 C.c. gave 33.6 C.c. NO
2d " — 3.53 C.c. " 33.5 C.c. "

Corrected for temperature, pressure, vapor tension, and solubility.

1st — 3.53 C.c. gave 30.25 C.c. NO
2d — 3.53 C.c. " 30.17 C.c. "
 $\frac{30.25 \times 0.336}{.1126776} = 90.20\% \text{ C}_2\text{H}_5\text{NO}_2$
 $\frac{30.17 \times 0.336}{.1126776} = 89.97\% \text{ C}_2\text{H}_5\text{NO}_2$

(.1126776 = 3.53 × .03192. 3.53 = volume of the dilution used: .03192 = wt. of ether in one C.c. of dilution.)

In the column of percentages, the figures given are for total nitrites, though simply stated as ethyl nitrite. Of the ten packages examined, three bore an assay label, and these tested

fully up to the value claimed. The remainder made no claim to any definite percentage, but the purchaser is assured that they are *strictly* U. S. P. in every respect, number 8 excepted, the directions for dilution placing its value at half that strength. Four—both from one source—are so very *poor* in ether that they may be dropped out of comparison with the remaining five. To these attention is directed, as all, with the exception noted, purport to be the same thing, and, aside from an accurate assay, give no positive evidence of being otherwise. The spirit obtained by dilution as directed contains from 1.4 per cent to 3 per cent of ethyl nitrite, while the official standard based on the lowest limit is 4 per cent (labelled or claimed as U. S. P.). Just what percentage of absolute ethyl nitrite the washed ether of the pharmacopoeial process usually contains appears as yet to have been undetermined. An inquiry, addressed to Prof. Lloyd, was referred to Dr. Rice, who in turn referred to an article by H. B. Parsons (NEW REM., 9, 83) in which it is shown that the unwashed ether may contain 63 per cent of nitrous ether, but the percentage in the washed ether is not named, and no minimum percentage is fixed. It would appear from this that the official quantitative test should show 3 per cent and not 4 per cent. Upon what assays the latter percentage was based the writer was unable to learn.

However, until proven conclusively by assay of a large number of samples of washed ether that it does not reach 80% pure ethyl nitrite, the quantity inferred from the official formula and test, it is the duty of the pharmacist to supply a 4% spirit, however this may have been obtained. The official product, and not the official formula is our standard.

Other properties being equal, there can be no objection to using commercial nitrous ether in preparing the spirit, provided it bear a truthful assay label; but whether several of the manufacturers would be willing to affix this to each package is doubtful, if the specimens examined represent their average product. If it were done, then the responsibility for a strictly official spirit would rest upon the purchaser, the pharmacist. Until manufacturers do this, but one decision can be based upon the result of the assays: Commercial concentrated nitrous ether is too variable in strength to merit our confidence, and its use for the purpose intended is to be discouraged.

At the suggestion of Prof. Lloyd, a large number of samples of recently made washed nitrous ether to be obtained from his laboratory, and perhaps from the laboratories of other manufacturers, will be assayed and the limits fixed within which a strictly official ether, and therefore spirit, must be found. The operator hopes to be able to present his report at the next annual meeting.

Bottle-Cement.—A cement especially valuable for bottles holding volatile liquids may be made by mixing finely-ground litharge with glycerin. It is used by painting it about the joint between the stopper and the lip or neck of the bottle. It dries rapidly, becomes brittle, and can readily be detached and scraped off with a spatula when it becomes necessary to open the bottle.

Moulding of Syrup of Rhubarb is prevented by Aug. Drescher by adding borax in the same proportion as carbonate of potassium.—*Drug. Cir.*

[The use of borax, for this purpose, or for keeping preparations of rhubarb and similar drugs, has also been introduced some time ago in Germany.—*Ed. AM. DR.*]

THE DANGER OF OMITTING DIRECTIONS, ETC., FROM PRESCRIPTIONS.*

BY S. J. BENDINER, OF NEW YORK.

"Several fatal accidents have recently occurred, which are in part due to the fact that prescribing physicians frequently omit from their prescriptions the name of the patient for whom the medicine is intended, and such directions as would indicate the manner of using, or the dose. What means may be employed to induce physicians to add these data in all cases, or at least whenever the prescription contains an energetic constituent?"

THE importance of this query is recognized by every experienced pharmacist, and the wonder is why this question has not been asked long, long ago, as it is a matter of almost daily occurrence that just such prescriptions as are indicated above, are presented in pharmacies, some of which, if dispensed without proper inquiries on the part of the dispenser, would jeopardize the life of the patient and the name and fame of both prescriber and compounder, but owing to the tact and good judgment of the latter, fatal accidents resulting through careless prescribing are often avoided.

Still, the practice of physicians to omit the most explicit instructions as to the use, and the name of the person for whom his prescription is intended, in all cases where energetic constituents are employed, ought to be abolished in the interest of the medical and pharmaceutical professions. It matters little how discreetly and diplomatically the dispenser questions the patient or his representative who presents such a suspicion-arousing recipe, as the latter is ever on the alert to fancy "something wrong" in the prescription, and who then, in his turn, generally interrogates: "Why do you ask—is it—Poison?"

The reason why such neglect in prescribing prevails, and is countenanced at all by the pharmacist is, because he tacitly understands that the prescriber has assumed all responsibility in the case, and that the patient or his attendant knows all about the medicine. But I have my grave doubts whether the dispenser, in a case of accident, would be held blameless by a court of law for filling an important order, and in the absence of directions upon that prescription, neglects to make due inquiry as to the proper employment of such potent agents. In the face of this, the physician, as a rule, resents close questioning on the part of the druggist as an undue interference with his business, by a withdrawal of his patronage from the store of the intermeddler. Nevertheless, such intermeddling by the pharmacist is justified, is legitimate, and is one of his prerogatives, which he is bound to exercise until a practice is stopped for which the following two cases, out of many which occurred either in my own or in a pharmacy where I was employed as clerk, may serve as illustrations:

R
Plumbi Acet., ʒi.
℞.....

In the absence of any written directions as to the use of the sugar of lead, the party presenting the prescription was asked how the article was to be used, whereupon he promptly replied that it was to be taken in teaspoonful doses for kidney trouble! Of course

* Read at the meeting of the N. Y. State Pharm. Assoc., in reply to Query No. 49.

the physician meant to write *potassii acetat* instead of *plumbi acetat*.

The other case in point was a prescription with full directions for a number of powders to contain among other, though harmless, ingredients, six grains of pulv. Doveri in each powder. During its preparation the versatile female servant kept up a voluble conversation, and accidentally dropped the unsolicited and startling information that the powders were for the baby, a few weeks old!

Well, we did not dispense those powders, and lost our customer and the physician, yet we saved the doctor's reputation, let alone the baby.

To recapitulate, had the physician in the first case written the directions upon the prescription, and in the second mentioned in writing the name of the patient, namely: "Infant —" no blunder could possibly have been made by a careful dispenser. It is, therefore, not only on account of the doctor and the pharmacist, but primarily on account of the patient, that I advocate a reform which will do away at once, and for all time, with such vague prescription writing.

Were our governments, State and National, patriarchal like those of the continent of Europe, we might perhaps successfully petition Congress and the Legislature to enact a law similar to the one enforced in Germany, which not only compels the prescriber to write the name of the patient upon the prescription, but also insists that he underline an eventual excess of the maximum dose of an active drug allowed in the Pharmacopoeia. Even if this step were undertaken, to seek relief in the way of National and State Legislation, it would take years perhaps of agitation and persistent efforts to obtain it.

But we can succeed much sooner by a direct appeal to the practitioners of medicine and professors of Medical Colleges of the State. This is the high mission of our State Pharmaceutical Association. Let our President appoint a committee, consisting of members professionally well known throughout the State, for the purpose of issuing a circular in the name of this Association, and addressed to every practising physician and teaching professor of a medical college, setting forth the grave points here discussed, and requesting them to hereafter write the name of the patient, and in case of energetic constituents, the full directions upon their prescription.

I have no doubt that, if this is properly and respectfully brought to the notice of the medical profession, each and every physician will cheerfully comply with our request. Let the Empire State move in this matter first, as it has moved in the matter of the now national "Formulary," and be just as successful.

Poison-Closets.

AUGUST DRESCHER has had much satisfaction from the following arrangement of poison-closets. Two closets are provided. In one is kept hydrocyanic acid; cyanide of potassium; preparations of arsenic; mineral acids; carbolic, cresylic, oxalic, and chromic acids; silver salts; opium and its preparations; iodine, and certain powerful tinctures, extracts, powders, and pills containing poisons. In the second closet are three subdivisions containing minor poisons and substances which are dangerous rather than strictly poisonous: e. g., chloroform, iodoform, ethers, collodion, cantharidal collodion, wood naphtha, chloral hydrate, butyl chloral, cantharides, narcotic herbs, roots and seeds, euphorbium, cowhage, and the oils of tansy, pennyroyal, croton, and bitter almonds.—*Drug. Cir.*

APPARATUS FOR THE DETERMINATION OF MELTING POINTS.

GUSTAV OLBERG has constructed an improved apparatus for determining melting points, in which the liquid surrounding the thermometer and the substance to be examined is kept in motion by a current caused through heat, instead of by means of mechanical stirring.

The apparatus consists of two glass tubes joined by an upper, rather wide lateral tube, and by a lower narrow one, of the shape and dimensions shown in the cut. The tube *B* has an expansion in its lower portion, so that the bulb of the thermometer and the bulb containing the substance may be surrounded by an ample volume of the circulating liquid. When heat is applied to the tube *A*, the liquid will ascend, and a current will be established towards *C*, *B*, and *D*, in the direction of the arrows. This current will constantly change the liquid surrounding the bulbs at *B*, so that all stirring is rendered unnecessary. The neck of the tube *B* is a little longer than that of *A*, because the cork which holds the thermometer and melting tube needs some room to slide up and down in. The observer should place the apparatus so that *B* is nearer to him than *A*. Since it is known that thermometers require a little time to follow the rise of temperature, it is best to first examine substances of known melting point, and to adjust the rate of immersion of the thermometer, as compared with the position of the melting tube so that the correct temperature will be indicated.—*Rep. d. Anal. Chem.*, 1886, 94.

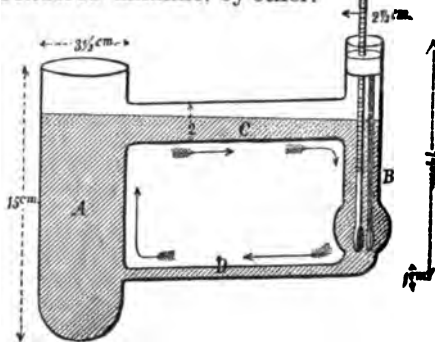
Method of Testing for Bromine in the Hydrobromides of Certain Alkaloids.

DR. A. WELLER, connected with Zimmer's quinine works in Frankfurt o. Main, reports that a customer of the firm had returned some hydrobromide of quinine which he claimed did not contain any bromine at all, while it was, on the contrary, perfectly pure. As is well known, one of the most commonly used methods to detect bromine in combination is to add to the compound some chlorine water (which liberates the bromine), and then some bisulphide of carbon, which dissolves it with a characteristic color. Heretofore it had not been pointed out in chemical literature, that the above-mentioned method fails to detect the presence of bromine in the hydrobromides of certain (and perhaps most) alkaloids. Iodine is, however, quite readily detected in this manner, but care must be taken that the solutions are dilute and rather strongly acidulated with hydrochloric acid. Only in this case will the violet coloration of the bisulphide become plainly distinguishable. In concentrated, or in but feebly acidulated or neutral solutions, addition of chlorine water produces copious precipitates of brown periodides, which are apt to mislead, as they are dissolved by bisulphide of carbon with a violet-brown or dark-brown color. But when this precipitate is produced in a dilute acid solution, it does not interfere with the reaction.

Dr. Weller now points out that, when the above-mentioned test for the presence of bromine is performed in presence of cinchona alkaloids, no color is imparted to the bisulphide of carbon. The reason is this, that the liberated bromine combines at once with the alkaloids, forming bromated bodies which yield up no color to the bisulphide. The four principal cinchona alkaloids, quinine, quinidine, cinchonine, and cinchonidine, behave exactly alike in this respect. And it is, moreover, immaterial, whether their

solutions are concentrated or diluted, neutral or acidulated (with HCl or HBr). Yet the presence of bromine may be easily and certainly proved, if the alkaloids are first removed by soda, and the filtrate, after being acidulated, treated in the usual manner.

According to Dr. Weller, the bromine reaction fails to show itself also, under similar conditions, in solutions of the hydrobromides of morphine, codeine, strychnine, and brucine. In these cases, the bromine may likewise be easily detected, if the alkaloids be first removed. For this purpose, strychnine and brucine may be precipitated by soda; morphine must be separated by sodium carbonate, and codeine by sodium carbonate and agitation with ether. The bromine in hydrobromide of quinoline can likewise be detected only after the quinoline has been removed from the solution, previously rendered alkaline, by ether.



G. Olberg's test for melting points

On the other hand, the bromine reaction succeeds without difficulty in solutions of the hydrobromides of caffeine, cocaine, atropine, conine, and pyridine. It is, however, advisable, in these cases, to use dilute and acidulated solutions, in order to avoid turbidity or precipitates which might be produced by the chlorine or liberated bromine.

Even in the case of codeine and the other alkaloids mentioned in connection with it, the addition of chlorine water sometimes causes secondary effects. For instance, a neutral solution of hydrobromide of codeine is colored rose-red by chlorine water; solution of brucine is colored red by chlorine and bromine, and in solution of strychnine a white turbidity or precipitate is produced by chlorine.—*Abstract from Arch. d. Pharm.*, 224, 161.

Tannate of Quinidine.

THE following method for preparing this tasteless compound is given by Dr. Hager as an improvement on the formula laid down in his *Pharmaceut. Praxis* (suppl., pp. 274).

Dissolve 40 parts of sulphate of quinidine in 1,000 parts of water with the aid of 20 parts of diluted sulphuric acid (1 acid, 5 water). Also dissolve 87 parts of very dry (or 89 parts of powdered and air-dry, or, rather, air-damp) tannic acid in 1,000 parts of distilled water. Filter the latter solution, if necessary, and dilute it afterwards with 1,000 parts of warm distilled water. Finally, dissolve in a separate vessel 15 parts of bicarbonate of sodium in 500 parts of distilled water. All three solutions standing at hand, pour the bicarbonate of sodium into the tannic acid solution, stir quickly, and, keeping up the stirring, pour into it the solution of quinidine sulphate, in a thin stream. Let the mixture settle during 24 hours, then transfer it to a strainer, pouring back the strained liquid until this runs off clear. Wash the precipitate remaining upon the strainer with 1,500 parts of distilled water. When the liquid has drained

off as much as possible, fold the strainer together and subject it to a very gradually increased pressure. The expressed liquid is usually somewhat turbid; it is, therefore, allowed to settle by setting it aside in a cool place for 2 or 3 days, the supernatant liquid then poured off, and the small remaining precipitate collected on a separate small filter. When the strainer has been folded together, it is best to place it between two thick layers of bibulous paper, or between two thin layers of this and porous tiles, pressure being produced by the gradual imposition of iron weights. If the mass were pressed tightly at once, the strainer would burst, as the water inclosed inside would not have time to penetrate through the mass to the outside.—*After Pharm. Centralh.*, 1886, 177.

Austrium: A New Element.

AMONG the papers of the late Dr. Linnemann, Professor of Chemistry in the University of Prague, has been found a communication addressed to the Royal Academy, and bearing the title, "Austrium, a new metallic element." It describes a new metallic element obtained by the deceased from arthrite from Arendal, having a spectrum with two characteristic lines in the violet, one of which is fairly coincident with an unidentified line in Angström's atlas. It is stated that the paper will be published in the transactions of the Academy.—*Pharm. Journ.*

Salt and Borax in Nevada.

If the salt formations of Nevada were in railroad communication, there would be no market in this country for the foreign article. In Lincoln County, on the Rio Virgin, there is a deposit of pure rock salt, which is exposed for a length of two miles, a width of half a mile, and is of unknown depth. In places, cañons are cut through it to a depth of sixty feet. It is of ancient formation, being covered in some places by basaltic rock and volcanic tufa. The deposit has been traced on the surface for a distance of nine miles. It is so solid that it must be blasted like rock, and so pure and transparent that print can be read through blocks of it a foot thick. At Sand Springs, in Churchill County, there is a deposit of rock salt fourteen feet in depth, free from any particle of foreign substance, which can be quarried at the rate of five tons a day to the man. The great Humboldt salt field is about fifteen miles long by six wide. When the summer heats have evaporated the surface water, salt to the depth of several inches may be scraped up, and underneath it a stratum of pure rock salt of unknown depth. Soda, borax, and other valuable minerals also exist in large quantities near these localities, and branch railroads will sooner or later bring them into market. A considerable business in gathering borax is already established on the line of the Carson and Colorado Railroad. If Nevada will cut down her working expenses and develop her natural resources, she will be above the necessity of seeking land grants from her neighbors or from the general Government.—*San Francisco Bulletin*.

Poisoned Honey.—At a recent meeting of the Dresden Agricultural Society, a local druggist reported that, in a neighborhood where the deadly nightshade grew abundantly, the bees had incorporated with the honey sufficient poison from these flowers to account for numerous and occasionally fatal cases of poisoning. He also stated that gelsemium had been detected in American honey [all of which is extremely doubtful].—*Ed. AM. DRUGGIST*.

ON THE MANUFACTURE OF
HYPOPHOSPHITES.*

BY THOS. D. M'ELHENIE, OF BROOKLYN.

IN reply to query No. 63, I beg to say that so far as I have been able to learn, the decline in price of the hypophosphites is chiefly due to the increased production of phosphorus. By closer attention to details and mechanical improvements in the manufacture, the percentage of yield has been increased and the price reduced accordingly, purely on commercial grounds and as a result of competition. Phosphorus is not now produced in the United States. This market is supplied from England and Germany, both with phosphorus and calcium hypophosphite. The salt is made as it probably always has been by boiling phosphorus in milk of lime, phosphuretted hydrogen escaping and igniting, phosphate of lime being deposited and hypophosphite remaining in solution, to be obtained by filtration and evaporation. The salt reaches this country practically pure, and the less important hypophosphites are made here from the lime salt by the different manufacturing chemists. The following data, furnished me by Mr. Williston, with Charles Pfizer & Co., of New York, show why it would not pay to manufacture the hypophosphites in this country directly from phosphorus. According to the theoretical weights, 62 lbs. of phosphorus should yield 85 lbs. hypophosphite of lime, but in practice it is far from being the case. A maximum yield may safely be put as 1 lb. for each pound of phosphorus employed, while Mr. Williston tells me it will often require nearly 1½ lb. of phosphorus to make 1 lb. of the lime salt. The prices given below are based upon the New York and London markets for about May 1st, 1886.

Price of Phosphorus in London, 2s. 4d.	.58
Add about 10% for Lime, labor, etc....	.06
	.64
Duty 25% ad val. on Hypophosphite ..	.16
Cost to import.....	.80
Price of Phosphorus in London.....	.58
Specific duty per pound.....	.10
	.68
Add for Lime, waste, etc., 10% .....	.07
	.75
For labor in United States.....	.25
Cost to make here.....	\$1.00

It would be difficult, perhaps impossible, for an American retailer to procure any statistics of product of any given chemical from foreign manufacture. It is estimated that the importation of calcium hypophosphites into the United States is about six thousand pounds annually. The principal makers are Typke & King, London; E. Merck, Darmstadt, and E. DeHaen, Hanover.

Care of Poisons.

"THE way we are keeping the most dangerous poisons—and it works very well indeed—is to put them on a top shelf in a compartment by themselves—a kind of poison cabinet, with a door to keep out dust and light. It is as high as the main shelving, being a part of it, and the dispenser has to use a short step-ladder in order to reach the bottles, which are to be replaced as soon as the required quantity has been weighed out and checked by two persons."—O. M. OLSON, *Nat. Druggist*.

[ORIGINAL COMMUNICATION.]

EMULSIONS.

BY CHAS. T. P. FENNEL, PH.G., OF CINCINNATI,

Prof. of Practical Pharmacy, etc.

THE adoption and indorsement of the New York and Brooklyn Formulary by the American Pharmaceutical Association, making it national in its character, justifies the offer of a few suggestions on the subject. The members of the various committees have undoubtedly given much of their valuable time and expended considerable material in *causa honoris*, and are deserving of the highest praise for their efforts in establishing a formulary that will place all so-called "elegant pharmaceuticals" on a uniform basis. These formulæ are offered as a substitute for the vile nostrums introduced by the manufacturing pharmacists, under the title of elegant preparations, and as such are supposed to be based on strictly pharmaceutical principles, their names indicating the nature as well as the constituents of the preparation. Under these circumstances, I felt skeptical as to the permanency of the class called emulsions. According to pharmaceutical principles, an emulsion is considered a mere mechanical mixture of an oil, fat, or resin with water, the admixture being promoted and rendered permanent for a greater or less period of time by the presence of a gum or an equivalent substance; permanency depending on the quantity of gum or its equivalent. Taking this as a basis, I felt satisfied that formula No. 53, Stronger Emulsion of Cod-Liver Oil, was not a satisfactory one, and would not produce a true emulsion. Nevertheless, I prepared the mixture according to the formula, adhering strictly to the directions given. After triturating thoroughly for ten minutes, continuously in the same direction, I concluded that emulsification had taken place, and finished the preparation as directed. After one hour, the mixture began to separate, and after eighteen hours, showed two almost equal layers. The experiment was repeated, the result always the same, complete separation taking place between sixteen to thirty hours, depending on the time of trituration; clearly demonstrating the want, or rather the insufficient supply, of the emulsifying agent.

Emulsion of castor oil and of oil of turpentine were likewise prepared, and in every instance strictly following the directions of the formula. The result in both cases very unsatisfactory—the turpentine emulsion separating completely within five minutes. Formula No. 54 also offers a very objectionable feature, namely, the addition of essential oils. This addition to a completed emulsion has a great tendency to bring the globules of oil together, inducing the oil of the emulsion proper to combine, breaking the mixture of already emulsified oil. Another objection might be raised to the use of avoirdupois weight without specifying system of measure.

Some years ago, under the direction of Prof. A. Fennel, I had ample opportunity for determining the quantity of gum necessary to produce a perfect and permanent emulsion in the shortest period of time.

Success depends largely on forming the nucleus, and special care should be exercised in determining the quantity of gum and water necessary to emulsify the prescribed quantity of oil.

Stronger emulsion of cod-liver oil, prepared according to the following formula, will give a very satisfactory product:

Cod-liver oil, four fluid oz., wine measure.
Acacia, in very fine powder, two troy oz.
Water, enough to make eight fluid oz.

Place the Acacia in a dry mortar, and add the oil gradually, triturating continuously to a uniform smooth paste. Then add three fluidounces of water at one time, triturate continuously until the oil is emulsified. This is accomplished in about one minute, and complete emulsification indicated by crackling sound while triturating. Finally, add enough water to make the product measure eight fluidounces wine measure, being careful not to use the oily graduate, otherwise the perfect emulsion will very soon be broken up. This product will keep for months without the least indication of separating, and form a true stock emulsion.

The proportion for forming the nucleus of an emulsion of a fixed oil, balsam, or oleoresin may be expressed as follows: Oil, 1; gum, ½; water, ½; the emulsion is quickly made. An addition of water to this nucleus will not produce any separation. Emulsions of essential oils require a larger amount of gum, the proportions may be expressed as follows: Oil, 1; gum, 1 to 1½; water, 1 to 1½; these are also quickly made, and are permanent and palatable.

SUMMARY OF PHARMACOPŒ-
IAL PREPARATIONS RARELY
OR NEVER USED.*

BY GEORGE W. SLOAN, M.D., OF INDIANA-POLIS.

THE committee to whom was given the work of revising the Pharmacopœia for 1880, in their preface made a request of "all dealers in medicines that on or about the first day of January of the years 1884 and 1889, they will report to the chairman of the committee a list of those articles and preparations which have not been used at all, and of those seldom prescribed previous to those dates."

Feeling this subject might prove of interest to the members of this association, and hoping it would be a means of stimulating others to a like work, I have prepared the following list.

As to drug articles, it is the writer's opinion that as the country for whose use the Pharmacopœia is intended is extensive, so should the list of medicinal agents be sufficiently so, in order that the whole people should have the benefit of well described and useful remedies.

He also believes that if the pharmacists were as industrious in calling the attention of physicians to the various new introductions into the Pharmacopœia as the manufacturers are with their productions, it is probable many articles named as rarely or never used, would be stated otherwise.

Again, the writer believes that once in ten years is too frequent to make radical changes in the Pharmacopœia, for we seem hardly used to one set of formulæ and names before there comes a change in methods and proportions.

The following list contains the preparations that are rarely or never called for at my place of business:

RARELY USED.

Abstractum Digitalis,
Abstractum Hyoscyami,
Abstractum Jalapæ,
Acetum Opii,
Acidum Chromicum,
Æther Aceticus,
Alumini Hydraz,
Amylum Iodatum,
Aqua Amygdalæ Amara,
Argenti Nitras Dilutus,
Argenti Oxidum,
Ceratum Sabinæ,
Charta Cantharidis,
Charta Potassii Nitratis,
Collodium Stypticum,
Cupri Acetas,
Decoctum Sarsaparillæ,
Emplastrum Ferri,
Ext. Chiratae Fld.,

* Read at the meeting of the N. Y. State Pharm. Association.

* Read before the Indiana Pharm. Assoc.

Ext. Hæmatoxyli,
Ext. Sabinæ Fld.,
Ferri Carbonas Saccharatum,
Ferri Iodidum Saccharatus,
Ferri Oxalas,
Glyceritum Amyli,
Glyceritum Vitelli,
Hydrargyri Cyanidum,
Hydrargyri Sulphidum Rubrum,
Linimentum Belladonnæ,
Linimentum Cantharidis,
Linimentum Sinapis Comp.,
Liquor Ferri Nitratis,
Liquor Gutta-Perchæ,
Liquor Sodii Arseniatis,
Mel Rosæ,
Mistura Ammoniaci,
Mistura Amygdalæ,
Mucilago Cydonii,
Mucilago Sasafras Medullæ,
Picrotoxinum,
Pulvis Morphinæ Com.,
Pulvis Rhei Com.,
Quininæ Hydrochloras,
Sodii Arsenias,
Sodii Santoninas,
Spiritus Myristicæ,
Syrupus Allii,
Syrupus Ferri Bromidi,
Syrupus Lactucarii,
Tinctura Ipecac. et Opii,
Tinctura Physostigmatis,
Tinctura Sumbul,
Unguentum Acidi Gallici,
Unguentum Acidi Tannici,
Unguentum Chrysarobini,
Unguentum Mezerei,
Unguentum Plumbi Carbonatis,
Vinum Aloes,
Vinum Antimonii,
Vinum Aromaticum.

NOT USED.

Abstractum Aconiti,
Abstractum Belladonnæ,
Abstractum Conii,
Abstractum Ignatiæ,
Abstractum Nucis Vomiceæ,
Abstractum Podophylli,
Abstractum Senegæ,
Abstractum Valerianæ,
Acetum Lobeliæ,
Acetum Sanguinarieæ,
Aqua Creasoti,
Ceratum Camphoræ,
Decoctum Cetrariæ,
Emplastrum Ammoniaci,
Emplastrum Ammoniaci cum Hydrargyro
Emplastrum Asafetideæ,
Emplastrum Picis cum Cantharide,
Ext. Rosæ Fld.,
Glycyrrhizinum Ammoniatum,
Linimentum Terebinthinæ,
Mistura Chloroformi,
Mistura Rhei et Sodæ,
Mucilago Ulmi,
Physostigminæ Salicylas,
Syrupus Aurantii Florum,
Syrupus Calcis,
Tinctura Chirataæ,
Tinctura Croci,
Tinctura Ignatiæ,
Tinctura Pyrethri,
Trochisci Acidi Tannici,
Trochisci Cretæ,
Trochisci Ipecacuanhæ,
Trochisci Magnesieæ,
Trochisci Sodii Santoninatis,
Unguentum Sulphuris Alkalinum.

Indestructible Paste for Closing Letters.

LETTERS or envelopes which it is desired to protect against unauthorized opening (by moistening the pasted portion), may be securely sealed by using a solution of oxide of copper in ammonia as paste. This liquid has the faculty of dissolving cellulose. When applied to the paper it dissolves the cellulose on the surface, and on drying the two partially dissolved surfaces adhere indissolubly together.

The same thing may be accomplished by using water-glass (silicate of soda or potassa). In this case the chemical action is different, but when it is completed, the pasted surfaces cohere as permanently as in the preceding case.—After *Pharm. Zeit.*

Glycerin is employed in the dyeing of calico as a solvent for arsenious acid, six pounds of the acid being soluble in a gallon of good glycerin.

ON THE ESTABLISHMENT OF A DRUGGISTS' EXCHANGE BUREAU.

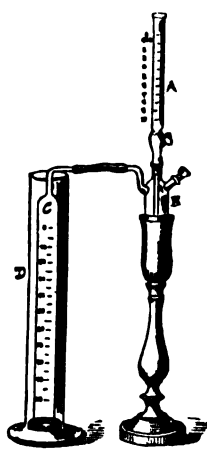
BY A. SAGER, OF CORTLAND, N. Y.*

"In view of the fact that druggists frequently change their location, that drug stores are frequently sold and purchased, and that such sale or purchase is usually attended by a broker's commission, which yields no benefit to the druggist, but rather offers an opportunity for collusion and fraud on the part of the broker, is it not possible, and would it not be desirable to establish a Bureau of Exchange under the auspices of the various County, State, and National Associations?"

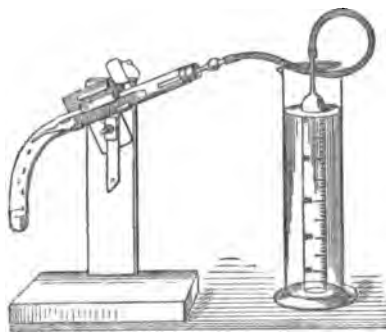
BEFORE answering the above question, I desire to state that I believe in making our Association as valuable to its membership as possible without derogating from the original purpose of its Organization, viz.:

First, The elevation of Pharmacy as a profession.

Secondly, The promotion of the interests of pharmacists throughout the country, socially and materially.



Apparatus for assaying hydrogen peroxide.



Bellamy's ureometer.

Already several important measures have been secured. The passage of a Pharmacy law by our State Legislature (the result of untiring effort on the part of our Committee of Legislation) has done much to secure the first object named. Our annual meetings and the efforts now being made to secure thorough organization in every county throughout the State will eventually secure the latter.

While it is possible to establish a Bureau or Agency for the purposes named in the query, the question remains, Would it be desirable? After careful consideration I am of the opinion that the Association is not at present prepared to take upon itself the responsibility and work involved in the establishment of such a Bureau or Agency.

However, I trust the time is not far distant when we shall be so thoroughly organized in every portion of the State that the plan suggested in the query may be practicable and afford reliable means of communication between seller and buyer.

* Read in answer to Query No. 44, at the meeting of the N. Y. State Pharm. Association.

ASSAY OF PEROXIDE OF HYDROGEN.

HYDROGEN peroxide, which is now frequently used in surgical practice as well as in the arts, may be assayed in the following manner, and by the use of the apparatus here described.

One part of the apparatus consists of a tube A holding 10 C.c., and divided into $\frac{1}{8}$. This is provided with a stop-cock, and is fitted, by grinding, air-tight into the neck of a glass vessel B having two lateral tubulures, one of which is closed with a stopper, while the other is connected by rubber tubing with an inverted burette graduated to 100 C.c. placed into a cylinder full of water.

When the apparatus is to be used, a small quantity of finely-powered dioxide (black oxide) of manganese is introduced into B through the free lateral aperture, the latter closed, and a sufficient quantity of peroxide of hydrogen poured into the tube A—say, for instance, 10 C.c. The water in the cylinder D is then adjusted so that it will stand exactly at the mark 0. (While adjusting the level of the water, the stopper in the lateral neck of B should be loosened to permit escape or access of air. And when it is reinserted, care must be taken that the zero point does not appear depressed.) The faucet of the tube A is now opened, and a definite amount of the liquid, say 1 C.c., allowed to flow on the oxide of manganese. Oxygen gas is immediately given off, and the evolution will be concluded after two to three minutes, if the apparatus is well agitated. [It is advisable to lift the burette C a little upwards, to rarefy the air contained in the apparatus. The generated gas will then have no tendency to press upwards against the liquid in the tube A when the faucet is open.] When no more gas is given off and no further portion of the liquid is to be admitted (in the case of weak solutions more will have to be taken), the burette C is lifted high enough, so that the level of the water, inside and outside, is the same, and the volume of oxygen then read off. Temperature and pressure should be taken notice of when accurate results are desired.—*Journ. Pharm. et Chim.* [5], 12, 501.

A NEW FORM OF UREOMETER.

FELIX BELLAMY has devised the apparatus here illustrated for the purpose of estimating urea.

2 C.c. of the urine to be examined are put into a curved tube, closed at a curved end, the tube being held by a clamp so that it may be placed at any inclination. The bromated soda solution is contained in a pipette or tube closed at one end, and when the apparatus is properly inclined, falls into the urine in drops, causing the evolution of gas, which is caught in the inverted graduated cylinder in the usual manner. The advantage of this apparatus is this, that the rate of access of the bromine solution may be regulated at will.—*Journ. Pharm. et Chim.* [6], 13, 178.

Benzoated Lard.

In reply to query 20 of the New York State Pharm. Assoc., "whether benzoated lard could be prepared by substituting benzoic or cinnamic acid for the benzoïn." Mr. Charles Khuen reports that pure lard treated with benzoïn keeps much better than that treated with either benzoic or cinnamic acid, or with a mixture of these two. He also found that samples which had been stored in the cellar kept better than those in the store, and that such as had been put in earthenware jars had kept better than those in glass vessels.

NOTES ON
PRACTICAL PHARMACY.*

(Continued from p. 106.)

LINIMENTS.

LINIMENTS, *Linimenta*, are prepared either by simple mixing in a glass, or by mixing and trituration in a mortar. A mixture mortar should be devoted exclusively to the preparation of liniments. The portions of the liniment which adhere to the pestle and mortar may be scraped together with a piece of stiff cardboard.

Liniments are formed when fluid caustic ammonia is mixed with fatty oils. If an alcoholic tincture or a large quantity of ethereal oil is to be added to the liniment, the latter must first be thoroughly mixed. If these ingredients were mixed with the oil and the ammoniacal fluid then added, the liniment would be less intimately mixed, and would separate into layers by standing.

LIME-WATER, mixed with fatty oils, likewise makes a uniform liniment, as does acetate of lead. The whole of the lime-water must always be shaken briskly with the entire quantity of the oil with which it is to be mixed. Should it first be shaken up with part of the oil, and the rest of the oil added afterwards, a homogeneous liniment will seldom be obtained.

The *extracts* to be mixed with liniments should be first dissolved in the watery elements of the liniment or, if the prescription does not order any, diluted with water to a thin magma.

OINTMENTS.

OINTMENTS, *unguenta*, are homogeneous mixtures prepared from fats and other materials, which are of stiffer consistence than liniments and softer than plasters. Lard or oils thickened with wax are usually the chief constituents of salves.

Ointments are mixed in porcelain [or wedgewood], which should be exclusively used for mixing fatty substances. They should be cleansed by being rubbed out with fine wood shavings [sawdust or "excelsior" packing], wiped off with a cloth, and then washed with a solution of soda and water.

Ointments are sometimes mixed on glass plates, instead of in mortars, by means of horn or iron spatulæ. Some dispensers find this method more convenient than the other, but mixing in the mortar is the best, and also conformable to rule. [In making larger batches of ointments, it will be found most convenient to use a polished marble slab of considerable dimensions, say 18x24 inches, or 24x36 inches. —ED. AM. DR.]

Wax, tallow, oil of cocoa, spermaceti, and stearin, are to be added to ointments after being first made fluid by partial melting, but if wax or stearin be used, the mixture must be stirred until cool.

When several ointments are to be mixed, the more consistent must always be first triturated with a small portion of the softer.

Dry substances, or those that are insoluble in water or difficult of solution,

such as *oxide of mercury, white precipitate, oxide of zinc, carbonate of lead, calomel*, as well as the alkaloids *quinine, morphine, veratrine*, and their salts, before being mixed with fat, must be prepared as finely as possible with a few drops of oil of almonds or some other bland fatty oil. If the quantity of insoluble substance, as for example, white lead or oxide of zinc, is too large to be triturated with a little oil, then, since the use of oil in large quantity would make the ointment too soft, a pestle and mortar are heated, and they are prepared with a small melted portion of the fat with which they are to be mixed, or they may be prepared with water, which by being mixed with the fat will become partially separated again, and may be poured off. This latter method of comminution, however, does not generally conduce to the good appearance of the ointment, or the separation of the water may not be complete.

In case *Optum* or *EXTRACTS* form constituents of the ointment, together with the above-named substances, oil should not be used, but rather water, with which a magma is made by triturating it together with the extract and the other substances, which mag-

ma is finally united with the fatty mass by trituration.

Salts which are soluble in water may also be finely divided by means of water, yet not so finely as may be done by fatty oils. It is better to make eye-salves containing *corrosive sublimate, sulphate of zinc, and nitrate of silver*, with oil, since, if prepared with water, the latter evaporates and promotes the formation of little crystals of the salt. Salts which require hardly their own weight of water for solution, and especially those which deliquesce in the air, such as *chloride of zinc, chloride of calcium, also iodide of potassium, carbonate of potassium, and caustic potassa* should be rubbed as fine as possible, and, having been dissolved in the smallest practicable quantity of water, mixed with the fatty substance.

RECTAL AND VAGINAL SUPPOSITORIES.

SUPPOSITORIES, *suppositoria*, are smooth, blunt, conical bodies made of drugs, having a length of 1½, 1¼, or 2 inches, a diameter at the base of ½ to ¾ inch, and a weight of 24 to 75 grains, [in this country, it has become customary to make them smaller; the U. S. Ph. directs them to be of about the weight of 1 gramme, or 16 grains] and intended to be introduced into the rectum. They should be of the consistence of a pill-mass, or a plaster which is not brittle, and also finished like a pill-mass, unless the prescription directs that they be cut out from a specified compact mass such as soap or cacao-butter. They are spread over with

oil of almonds [not customary in this country], and dispensed in little glass pots or in waxed paper. Either butter of cacao or tallow is usually prescribed as the constituents of suppositories. [In this country, the fatty material is often left to the selection of the pharmacist, who generally uses cacao butter.] In these cases an addition of wax is always [by no means! ED. AM. DRUG.] necessary in order to obtain an appropriate mass and consistence. If vaseline is prescribed as a constituent, the addition of wax is likewise necessary. They are formed by mixing the drug with the melted oil of cacao, and pouring or dividing the mixture, half cooled, by stirring into corresponding conical paper capsules, which are supported in damp sand, or into regular suppository moulds. By proceeding in this manner, the thorough mixture of the drug with the oil of cacao will generally be doubtful, and on the other hand the proper dosing impossible. In order to meet both requirements of the prescription, there should be added to the cacao butter or tallow the sixth or eighth part of its weight of yellow or white wax (according to the color of the suppository), and these having been mixed by heating moderately, the drug is added, and the mixture allowed to become almost cold, being stirred meantime. The mass is then divided by weight, and each portion formed by the fingers into a suppository, which may be rendered smooth by stroking with a hot spatula.

Here about 435 grains of cacao butter and 45 grains of white wax are to be melted in a porcelain mortar, and when half cold the tannin, rubbed to a fine powder, is added, and the mixture agitated until the mass can be kneaded with the fingers. Then it is divided into 10 parts of equal weight each.

℞ Acidi Tannici... gr. 15
Olei Theobromatis..... ¾ 1
M. Fiant suppositoria no. decem.

℞ Opii pulveris..... gr. 1½.
Extracti Belladonnæ..... gr. 5.
Semi taurini..... ¾ 1.
Misce ut fiant suppositoria 10.

In this case the opium and extract of belladonna are to be rubbed in a porcelain mortar, with 6 drops of water, to a thick mucilage, and this is to be intimately mixed with a small portion of a melted mixture of 405 grs. tallow and 75 grs. yellow wax. After the addition of the above ingredients to the half-cold fatty mixture, the mode of procedure is the same as that given in the foregoing example. The operation is much easier if the *opium* and *extractum belladonnæ siccum* in the form of fine powder are kneaded into the fatty mass.

The same procedure is also practicable without adding wax, but its use makes the fatty substance easier to knead with the fingers. Each suppository is to be rolled smooth with the blade of a plaster knife. [For further and more detailed information regarding suppositories, the reader is referred to Remington's Practice.]

VAGINAL SUPPOSITORIES are prepared in like manner as suppositories; only they are made as thick again (and, very frequently, globular). VAGINAL CAPSULES have lately come into use. These capsules are of the size of a pigeon's egg, but as to form and character they resemble gelatin capsules with lids. They are filled with the drug, closed by means of mucilage, and dispensed in boxes. Capsules

*The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

made from cacao butter, which are to be filled with a drug, can only be dispensed when the moulds for the manufacture of such capsules are at the command of the dispenser.

Should GUTTA-PERCHA be ordered as the constituent, it must be cut fine when hot, and powdered and mixed with the drug in a pill-mortar heated to 100° C., and the suppositories formed out of the soft mass while still hot.

HOLLOW SUPPOSITORIES, EMPTY SUPPOSITORIES. — American physicians some years ago introduced hollow

suppository for the introduction of the medicines into the *vagina* and the *os uteri*, where it is kept in contact with the diseased parts by means of a tampon. A and B are used for any part of the *urethra*, the cavity of the uterus, and the nasal mucous membrane.*

BALLS.

BALLS, *globuli*, are [sometimes] ordered [by continental practitioners] to be used in baths. The drugs they contain are of various consistence. In case the prescription leaves the selec-

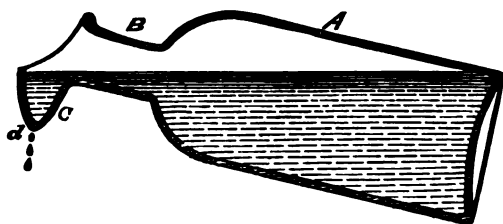
Misce. Fiant globuli quinque ad balneum.

An addition of about 150 grs. of powdered tragacanth, with the necessary quantity of *aqua glycerinata* is sufficient to produce a mass of the consistence of pills, which is to be formed into balls. If necessary, they are sprinkled with lycopodium.

Liquid drugs should be made into a mass with dry white clay (*argilla, bolus alba*).

DROPPING.

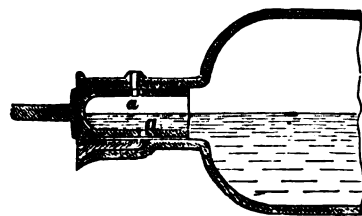
The measuring of fluid drugs by



Putnam's drop-counter.



Pool's dropper.



Lamprecht & Hirdes' drop-counter.



Drop-Pipette.

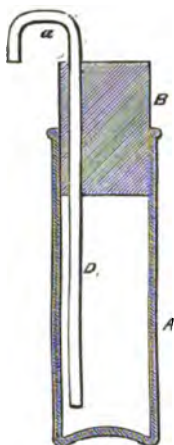


FIG. 1.

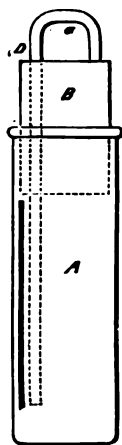


FIG. 2.

Dixon's drop-counter.

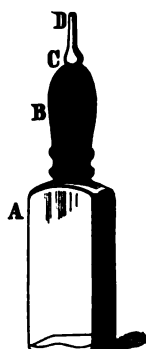


Fig. 1.



Fig. 2.

Drop-filter.



Bravais' drop-counter.



Salleron's drop-counter.



Lebague's drop-counter.

suppositories, with stoppers, which are filled with the drug and closed, and then put into the rectum, the nose, etc. The convenience of their use is apparent. The mass from which they are made is cacao-butter.

The size 0 is for children, and can also be used for the ear and nose. No. 1, 2, and 3 are intended for the rectum. No. 3 and 4 may be used for the introduction of nourishment *per rectum*, and No. 4 may also be used for vaginal medication. No. 5 is a round, hollow

tion of constituents to the dispenser, he will use glycerin and powdered tragacanth only when caustic lime or sulphide of calcium do not enter into the composition of the balls. Otherwise they would be too hard.

B Ferri Sulphatis cryst.	3
Potassii Iodidi.	5
Sodii Chloridi.	6½

* These hollow suppositories were introduced to the trade by Hall & Ruckel, wholesale druggists, Nos. 218 and 220 Greenwich street, New York.

means of dropping is an operation of very common use. The weight and size of the drop are dependent upon the size and thickness of the rim of the vial on which it gathers and from which it falls, and again upon the temperature and specific gravity of the fluid. But while the drop varies with the size and thickness of the rim, yet the specific gravity of the fluid bears no definite proportion to the size and weight of the drops. Hence a specific number of drops, and their common

weight, relate only to the vessel from which the experimental dropping took place.

A DROP-COUNTER, called *compte-gouttes* by the French, was invented by Salleron.

This always delivers drops of the same size. It consists of a flask fitted with a lateral tube bent downwards, the lumen of which is of a fixed diameter, and which does not come to a point at the end from which the drops fall, but is cut off straight. The cut end (3.3 mm. in diameter), as well as the external end of the tube, is ground. The drops of fluid coming out of the narrow bore of the tube do not adhere to the cut surface nor rise above the sharp edge to the external surface.

Twenty drops of water from Salleron's drop-counter weigh 1.0 grammes (15.4, or, practically, 16 grains*).

[As Salleron's droppers, according to Hager's statement, are usually of bad construction, Pool's dropper might be used. This is primarily intended for stathmetic analysis (that is, gravimetric analysis in which the liquids to be tested and the test liquids are taken by weight). This is a flask with a bent neck arising from its lower part, and a small hole pierced through the neck, which is closed by one of the fingers when the flask is grasped. A stopper bearing a small thistle funnel, closed by a piece of sheet rubber, is inserted in its neck. When it is charged with the liquid to be dropped, it is taken in one hand, one finger being over the hole in the neck, and by gentle pressure upon the rubber cap, drops of the liquid are forced out.

A most convenient drop-counter for pharmacists' use is *Lebaigue's* (see Fig. 1.). It consists of a glass tube in one piece, closed above and blown into a hollow ball (a), and at the bottom having a capillary exit tube, so that twenty drops flowing out from the latter weigh exactly 1.0 gramme (16 grains). Beneath the globular enlargement at the top, the glass tube is ground so that the drop-counter may be used to replace the glass stopper. Under the ground portion (at c) are two little openings for the entrance and exit of the air. This drop-counter is modified in cut II., by having the upper globular enlargement (d) in the form of a glass stopper, so that after it has been taken out of the vessel (at e) the fluid may also be poured out in small quantities. When from 6 to 30 grammes and upwards are to be weighed out, the entire drop measure is taken out. Still more convenient than this is the vessel represented in III., which has two openings, one for the simple drop-counter and the other for measuring out large portions of fluid.

While speaking of *dropping tubes*, it may be of interest to review the different kinds which we have described in previous volumes, or which have come under our special notice, outside of the ordinary medicine dropper or plain pipettes known to everybody.

A simple form of Drop-Pipette was described some seven years ago in the *British Journ. of Photography*. It consists of a narrow glass tube drawn out to a point, and inserted with its other end into a rubber tube which, when charged, is closed with a cork. By gentle pressure, the liquid may be delivered in drops. This may be used when the ordinary dropper with a closed small rubber bag or bulb is not accessible.

A drop-bottle devised by Emmel P. Putnam (U. S. Pat. No. 224,807, of Nov. 23d, 1880) has a conical recess at the neck, so arranged that it does not interfere with the insertion of the stopper. The recess or cup has a fine opening in the bottom or point, whence the liquid issues in drops.

Another somewhat more complicated arrangement is that devised by Raoul Bravais, of Paris (U. S. Pat. 236,538, of Jan. 11th, 1881), consisting of a bottle, in the stopper of which are inserted two tubes, A and C. E is a rubber-bulb, to compress the air inside of the bottle, so that the liquid may be forced out through A when the bottle is inclined. A flexible wire, H, is attached to the bottle, for clearing out the interior of the tube A when required. When the apparatus is not in use, the wire may be coiled about the neck of the bottle, or it may be kept inserted in the orifice of the tube A.

A drop-counter was patented in Germany, in 1884, by H. Lamprecht and G. Hirdes (Germ. Pat. 24,116). It has a hollow stopper, provided with a small aperture at the side which corresponds to a similar aperture in the neck of the bottle, for the purpose of admitting air. Along the opposite side of the stopper a narrow channel is ground, by which the liquid finds its exit.

A very simple dropper may be made as follows: Take a narrow glass-tube drawn out to a point and bent at a right angle. Insert the wide end into the bottle (which should be rather full of liquid) and incline the latter. The liquid will ascend the tube by capillary attraction, and will eventually drop from the pointed orifice. In the absence of a glass tube, a narrow strip of filter paper or other unglazed paper, bent at right angles, will serve to conduct the fluid, and will deliver it in drops. See cut to the left of "Drop-Pipette."

A dropper which is at the same time a drop-filter was proposed by a French pharmacist in 1877. It is simply a rubber bulb of an olive shape, containing a glass-tube at one end and a pellet of cotton in the bulb C of the tube. It may be attached to the neck of a bottle (Fig. 1) or to a filter tube (Fig. 2). When inverted over a bottle, gentle pressure with fingers will cause the liquid to drop.

The dropping-bottle invented by Franklin M. Dixon, of Philadelphia (U. S. Pat. 234,003, Nov. 2d, 1880), has parallel sides throughout, or in the neck only, within which is a long stopper, through which a bent glass-tube a passes. When the apparatus is not in use, the open, short end of the bent tube a is turned so that its orifice rests on the stopper. When it is to be used, the tube is turned, so that the open end looks outwards as in Fig. 1, and by pressure upon the stopper or plunger, the liquid is made to issue in a stream or in drops, as may be desired.]

The subject of measuring by dropping instead of by weight is passed over by the *Pharmacopœia Germanica* in absolute silence, although it cannot be ignored. The official Prussian Price Table of Medicines supplies this deficiency by the following directions:

The following are to be deemed equal to one (1.0) gramme [16 grains].
20 drops of fat and specially heavy ethereal oils and tinctures,
25 drops of other ethereal oils, chloroform, acetic ether,
50 drops of ether, alcoholic ethers, and aqueous liquids.

[To be continued.]

Volumetric Estimation of Sulphuric Acid in Sulphates.

H. WILSON proposes to accomplish this by precipitating the neutral solution of a sulphate with an excess of barium chloride, and determining the excess of the latter volumetrically by solution of carbonate of sodium, phenolphthalein being used as indicator. As soon as all the excess of barium chloride has become converted into barium carbonate, the first drop of volumetric solution of sodium carbonate added in excess reddens the phenolphthalein.

If the solution of the sulphate is neutral and contains no substances precipitated by solution of carbonate of sodium, the operation is very simple. 20 to 50 Cc. of the solution of the sulphate to be tested are put into a capsule, heated to boiling, and a 4-per-cent solution of barium chloride (the exact strength of which is known) is added in excess. A few drops of solution of phenolphthalein are now added, and the boiling solution titrated with a 2-per-cent solution of sodium carbonate, until a red tint just makes its appearance.

If the original solution is acid, or if it contains substances capable of being precipitated by the carbonate of sodium, it is raised to boiling, treated with a few drops of phenolphthalein solution, and then with the solution of sodium carbonate, until it just begins to have a red tint. Now the chloride of barium solution is added, and the remainder of the operation carried out as in the former case.

If the solution is alkaline, it is first neutralized with hydrochloric acid.

Standardizing Volumetric Solution of Iodine.

In preparing volumetric solution of iodine, it is customary to start from the resublimed iodine of commerce, by dissolving a known quantity of this in an aqueous solution of iodide of potassium. As the iodine thus used is required to be pure—though it is often used without previous qualitative examination, as we have had ample opportunity to observe—a source of error may be introduced through the fact that it is accompanied by impurities. And, besides, a solution of hyposulphite of sodium has to be adjusted of such a strength that it will exactly correspond with it; and this latter solution is itself to be used for assaying iodine solutions of known strength.

All these operations can, of course, be carried out with great accuracy, and careful analysts do not find them troublesome. Yet, in some cases, it may be of advantage to utilize a proposition made by Wilhelm Kalmann (in *Ber. d. Deutsch. Chem. Ges.*, 1886, 728) for determining the exact titer of the iodine solution by means of the decinormal solution of soda. It consists in this, that the iodine solution to be estimated is treated with hydrosulphuric acid, whereby the iodine is converted into hydriodic acid. The acid solution is then mixed with a little methyl-orange, which is unaffected by hydrosulphuric acid, and titrated with soda until a yellow tint appears.

[Any bromine or chlorine present in the iodine would, of course, be also converted into the corresponding acids, and the decinormal soda solution would probably show this by the anomalous quantity of it used.]

1 C.c. of decinormal soda solution corresponds to 0.0127 Gm. of iodine.

Artificial Plants for botanical instruction are a novelty, prepared by Christine Jauch, of Breslau, under the scientific control of B. Stein. These are complete plants, of the size of the original; stem, leaves, fruit, flower, etc., being exactly copied, and colored after nature. They are intended to fill a long-felt want, as the natural plants suitable for illustrating lectures cannot always be collected. A great advantage is this, that they represent every organ in its natural size. They are put up in a series of ten, four of these series being now completed. Among them are many important medicinal plants, such as *Cinchona officinalis*, *Erythroxylon Coca*, *Colchicum autumnale*, etc. Each series costs 22 marks (in Breslau), and may be had through any importing German bookseller.

* Hager says: "It is to be regretted that it is difficult to obtain a well-constructed Salleron's drop-counter in Germany."

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EDITORIAL.

WITH reference to the recent pharmacy law enacted in Wyoming, while we have no desire to set up our legal light against that of our Wyoming friends, we may remark that the insertion of the word "registered" in the portion of the act relating to the appointment of the members of the Board of Pharmacy appears to us as tantamount to putting the cart before the horse.

Up to the passage of this act, the Territory of Wyoming had no "registered pharmacists."

The present law establishes a commission which is to register pharmacists of certain qualifications without examination.

The Governor is to appoint three commissioners; but he must select them from among "the registered pharmacists."

The question arises, how can the Governor select any *registered* pharmacists for appointment when there are none as yet in existence, and when the act of registering *any one* can only be performed subsequent to the act of appointment by the Governor?

It is true that the qualifications of the first three commissioners are defined as follows: "all of whom shall have been residents of the Territory for two years, and of at least five years' practical experience in their profession." But nothing is said in the law about the manner in which these three commissioners themselves shall become "registered."

This is a common defect in many laws of this kind, and may sometimes lead to a practical annulment of a law. When a new body or commission is created who are to act as it were as judges or umpires over members of their own profession, it is always advisable to make a special provision in the law, by which the first appointed body may—through virtue of their appointment—enjoy all the rights and privileges of those whom they have to supervise.

WE wish that our readers may give some attention to the paper on page 126, relating to the advisability of establishing a Druggists' Exchange Bureau under the auspices of the N. Y. State Pharmaceutical Association, as an instance of "how not to do it" and as a model to be avoided. It is rather as an illustration of these points that we have given it place in our pages than on account of its value, in other respects. So far as it expresses the writer's *opinion*, the whole might have been condensed into one phrase, *viz.*, "*Don't*;" but if we understand the purpose of having a subject submitted as a query to be answered after deliberation, it may be expected, with some reason, that the reporter will state some, at least, of the facts upon which he bases his opinion.

If the reasons are so apparent to those who give a little thought to the subject, that nothing but the individual opinion is necessary, there is then no occasion for making it the matter for a special report. It is, however, quite evident that the writer of the report considers such a bureau to be within the province of the Association and that its establishment may be desirable, and one cannot fail to be somewhat curious to know the special reasons why the Association is not in as good a position to consider the matter now as it is likely to be in the future.

ANOTHER exception which we wish to take to the matter of the query is the implied dishonesty of the few persons at present engaged in negotiating transfers of business and property, of the kind referred to. To the best of our knowledge and belief, the charge is entirely groundless, and one proof of it is the report itself, for if there were good grounds for belief that the brokers at present conducting the business are not reliable persons to deal with, the occasion for mutual action on the part of the members of the Association is a matter which demands more consideration than the bare statement of one individual member, that, in his opinion, the time has not arrived for interference on the part of the Association.

OUR individual opinion coincides with that of the reporter, but we will go further to say that the reasons for our belief are: That the present agencies for negotiating transfers through brokers and drug-journals are so satisfactory and efficient that it would be

a waste of *energy* for the Association to undertake a competition with them, unless it restricts the enjoyment of the services of such a bureau to its members and could make the privilege a valuable inducement towards the acquirement of membership.

THERE has been trouble in the Chicago College of Pharmacy, and some of the faculty have associated themselves with others to organize a new college, to be known as the Illinois College of Pharmacy, and located on the corner of Lake and Dearborn streets, in the building recently occupied by the Public Library.

We are not aware of the special occasion which required the duplication of the means of pharmaceutical instruction, but there is little doubt that both schools will find sufficient patronage and that both will be improved by healthy competition.

A TOUCH of aestheticism seems to have reached a recent medical writer who speaks of a "penile organ" instead of a penis, but remains silent about the "scrotal organ." This aestheticism so impressed us that we at once sat down on our anal organ, grasped our writing tool in our manual organ, stretched forth our brachial organ, and wrote the following protest which we at once took to the printers by setting in motion our pedal organs:

O ye editors of journals, medical and otherwise! Do not patiently submit to this subversion of the English language, and strangle this villanous mode of expression, should it ever again dare to appear in any manuscript submitted to you!

Charles Froebel, late Professor of Analytical Chemistry at the College of Pharmacy of the City of New York, died at New York, after a brief illness, on June 19th, 1886. He was the grand-nephew of Friedrich Froebel, founder of the Kindergarten system. His father, Julius Froebel, well known as an advanced thinker, journalist, traveller, and political economist, at present holds the position of German Consul at Algiers. Charles Froebel was born in Germany in 1836, and came to this country, with his father, in 1849. Having completed his elementary education, he went to Freiburg, where he studied natural history; subsequently, he continued his studies at Philadelphia under Prof. Ghent. At one time, he served in the United States Army, being mostly stationed on the plains, where he took advantage of the leisure and surroundings to continue studies in geology and allied branches of science. In 1873, he became Professor of Analytical Chemistry at the College of Pharmacy, and conducted the analytical laboratory up to within a few years ago. After his retirement from the faculty of the College, he undertook to establish a Bureau of Scientific Information, which unfortunately turned out to be a failure. Since then, he has been engaged in literary work, and was proposing a return to Europe when he was overtaken by an attack of erysipelas, which so exhausted him that he succumbed after a two weeks' illness. All who knew him admired him for his manly virtues, unflinching character, and superior attainments. He had a host of friends, and the news of his decease will sadly surprise many of his former pupils. May he rest in peace!

Medicated Cottons.

BESIDES the pure cotton-wool used in surgery, there is a considerable number of ingenious preparations in which the pure cotton is impregnated with a variety of medicinal substances, in order to render it a valuable agent in the dressing of wounds, in painful swelling or indurations, and for a number of external applications.

Purified Cotton-Wool.

Macerate the commercial article for the space of ten minutes in benzol, press out the liquid, and allow the cotton-wool to dry by exposure to the air. This treatment has for its object to remove any grease or resinous matters which may be present in the samples, and thereby enables them to absorb the medicating substances more easily. [This is *Gossypium* of the U. S. Ph.]

Iodized Cotton.

The iodized cotton of Méhu is prepared by thoroughly drying 375 grains of pure cotton-wool in a stove, then mixing with it 30 grains of iodine, and placing the mixture in a closed flask [or other vessel] at a temperature of 212° Fahr. for an hour, upon a water-bath. The iodine is thus equally diffused through the cotton. This preparation, it is said, acts as a useful revulsive in neuralgia, serous effusions, slight inflammation of the respiratory organs, etc. A modern French work gives the following instructions:

Iodine 1 part.
Purified Cotton-wool12 parts.

Inclose the iodine in some filter paper and place it at the bottom of a flask with wide mouth; then introduce the cotton-wool and close the flask by covering the mouth. Place the flask in a moderately warm place until the cotton appears to be uniformly colored by the iodine. The preparation must be kept in stoppered bottles with wide mouths, placed in a cool place and out of the light.

Salicylated Cotton.

This preparation consists of purified cotton-wool impregnated with about 1-300th of its weight of salicylic acid. It has been found useful as an antiseptic agent in the dressing of wounds. In cases of amputation it is asserted that the patient has been kept without fever by the use of a salicylated cotton-wool dressing, which was only required to be renewed at the end of the week. The formula for its preparation is as follows:

Purified Cotton-wool...100 parts.
Salicylic Acid..... 10 "
Alcohol.....100 "
Glycerin..... 1 part.

Dissolve the salicylic acid in the alcohol, add the glycerin to the solution, saturate the cotton-wool with the liquid, press out the superfluous liquid, dry with the usual precautions, and keep in wide-mouthed bottles.

Boracic Acid Cotton.

Purified Cotton-wool.... q. s.
Boracic Acid.....10 parts.
Water.....90 "

Dissolve the boracic acid in the water at a temperature of 140° Fahr., saturate the purified cotton-wool with this solution, press it, dry it, and preserve it in corked bottles having a wide mouth. (See below.)

Iodoform Cotton.

This preparation has come somewhat extensively into use during the last five or six years. It is best made in the following manner:

Iodoform..... 2 parts.
Ether10 "
Alcohol... ..10 "
Glycerin.....10 "
Purified Cotton-wool...30 "

Dissolve the iodoform in the mixture of the ether and alcohol, add the glycerin to this solution, and saturate the cotton-wool with the liquid. Let it dry by exposure to the air. Draw the cotton out and keep it in glass-stoppered bottles with a wide mouth, closing well, and placed in a dark, cool place. (See below.)

Glycerinated Cotton.

This is a preparation recommended by Gubler. It consists simply of pure cotton-tissue moistened with pure glycerin; and it is said that cotton so prepared is permeable to all medicinal liquids without losing either its suppleness or its lightness. It is obtained by pouring a few drops of pure glycerin upon squares of cotton, and then squeezing them as strongly as possible with the hands.

Hæmostatic Cotton.

To prepare hæmostatic cotton, the purified cotton-wool is boiled in a solution of soda, and then plunged into a solution of perchloride of iron.

Ammoniacal Cotton.

This product was described a few years ago by Mr. B. Brown, who observed that when ammonia gas is passed through pure, dry cotton-wool, it is absorbed to a very large amount. In a water-bath, exposed to the air, the preparation loses all its ammonia.—After *Chem. and Drugg.*

NOTE OF ED. AM. DRUGG.—Some of the preceding formulæ omit to give directions how the final product may be made to contain a definite amount of the medicinal material. It is evident that, if absorbent cotton be dipped into a solution of boracic acid of known strength, and the cotton is afterwards pressed out, two or three operators using this process will each obtain a product containing a different percentage of boracic acid, simply because each will probably use a different amount of power in squeezing the cotton. If uniformly-charged borated cotton is wanted, a weighed quantity of the absorbent cotton must be made to soak up the whole of the definite (weighed or measured) quantity of solution of boracic acid of known strength. The cotton will then contain all the boracic acid that has been present in the solution, and it now remains only to drive off the water. Of course, we are aware of the difficulty of making the boracic acid, and similar substances, adhesive enough to prevent it from being dusted off the fibre when the cotton is handled. But this can be done.

Regarding iodoform cotton, this may be prepared in the same manner as the iodoform gauze, for which we gave a formula on page 177 of our last volume.

The Solubility of Sulphur in Alcohol.

THE fact that sulphur crystallizes from its solution in hot alcohol in a white prismatic form has not, it appears, been generally noticed in text-books; for Miller's "Inorganic Chemistry" is the only book at my disposal in which I can find it mentioned. This is the more surprising as it has become of considerable importance since the introduction of rubber corks.

I discovered this fact for myself while separating some fat and sulphur with alcohol, being surprised at the deposition of white crystals from the hot solution.

By dissolving sulphur in hot methylated spirit, and allowing it to cool

slowly in a vessel surrounded by hot water, prisms of lengths up to half an inch were obtained; they were brilliantly transparent and so white that they might have been taken for crystals of nitre; but they had become quite opaque and pale yellow in the course of thirty-six hours, although kept under the liquid; a low power of the microscope showed very beautifully the change into octahedra.

A more important bearing of the subject is in its relations to the use of rubber corks with alcohol. Mr. G. S. Johnson has called my attention to some crystals which he obtained in extracting a resinous body with alcohol, and which proved to be sulphur derived from the rubber cork connecting his flask and condenser. If a rubber cork be boiled with alcohol for fifteen minutes, a good crop of sulphur crystals is obtained on cooling the liquid. It is evident that if alcohol be constantly distilled on to a rubber cork the resulting error will be still greater.—ARTHUR G. BLOXAM in *Chem. News*.

Analysis of Koumiss.

FROM a paper by Dr. P. Vieth, F.C.S., in *The Analyst*, April, 1886, on "Milk and Milk Products," we select the following, referring to the composition of Koumiss (Kumys):

"In addition to the analyses of mares' milk Koumiss, which I brought before the Society a few months ago, I wish to give you the composition of Koumiss made of cow's milk, and sold under the mark of "full Koumiss." The proteids were determined separately, viz., casein, precipitated by lactic acid; albumin, coagulated by boiling the filtrate; and lacto-protein and peptone, precipitated by tannic acid in the second filtrate. Sugar was not determined, but taken by difference; carbonic acid was not taken in account.

Age.		3 months...		3 weeks....		1 week.....		1 day.....		Asc.	
Water.		90.36	1.12	90.31	1.03	90.15	.92	88.50	.17		
Alcohol.		8.53	1.57	8.66	1.58	8.93	1.48	11.33	1.65		
Solids.		9.67	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Fat.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Casein.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Albumin.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Lacto-proteid and peptone.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Lactic acid.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Sugar.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Sol.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		
Insol.		9.11	1.70	9.66	1.58	9.98	1.48	11.33	1.65		

Composition of Cow's Milk Koumiss.

The composition of Koumiss of different ages clearly shows the progress of lactic and alcoholic fermentation and of the accompanying process of peptonization, the former by the decrease of sugar and the increase of lactic acid and alcohol, the latter by the decrease of casein and albumin and the increase of compound precipitable by tannin. Of further interest is the increase of the soluble and the decrease of the insoluble part of the ash, which, in my opinion, is due to two causes, viz., the increasing amount of lactic acid and the transformation of casein, with which the phosphates in milk are chemically combined.

Administration of Terebene.

The following formulæ for preparations of terebene are taken from the *Colonial Druggist* (reprinted in *Nat. Drugg.*), and will be found convenient to druggists, for they are usually applied to by the physicians for the proper combinations to administer new remedies:

Terebene is employed as a remedial agent, not only in cases of "winter cough," phthisis, dyspepsia, etc., as related by Dr. Murrell, but also in various affections of the alimentary canal, in certain skin diseases, and as a disinfectant; this has naturally created a considerable demand for this preparation.

The ordinary mode of taking terebene—"10 drops upon a lump of sugar"—has several disadvantages, not the least of which is that the sugar, if thoroughly impregnated with the hydrocarbon, is rendered—for some time at least—practically insoluble in water or saliva; it has, therefore, either to be crushed by the teeth and well masticated, or else retained in the mouth for an inconveniently long period. The linctus given below will be found far more convenient, as well as more palatable:

Take of

Terebene.....	5 fl. drs.
Powdered Gum Arabic.....	4 fl. drs.
Syrup of Tolu.....	1 fl. oz.
Strained Honey.....	2 fl. oz.
Tincture of Saffron.....	q. s.
Water.....	q. s.

Mix intimately in a small mortar the terebene and the powdered gum; emulsify carefully with 1½ ounces of the water, adding the syrup of tolu gradually toward the last. Stir in the honey until the whole has become smooth; make up to the measure of 6 fluid-ounces, and color with a few drops of the tincture of saffron. The dose is one teaspoonful. This linctus keeps well, and is generally appreciated, even by young children, while in a variety of throat affections it gives speedy relief, although free from narcotics; observations which also apply to

TEREBENE COUGH MIXTURE.

Take of

Terebene.....	1 fl. oz.
Powdered Gum Arabic.....	4 drs.
Powdered Sugar.....	3 troy oz.
Yolk of Eggs.....	2
Anise Water.....	2 fl. oz.
Camphor Water.....	4 fl. drs.
Distilled Water.....	q. s.

Mix the two powders in a mortar, and stir in the terebene. Emulsify with the yolk of egg, and the aniseed and camphor waters previously well beat up together. When perfectly smooth, make up with water to the measure of eight fluidounces. Dose: One teaspoonful as often as may be necessary. An acidulous modification is as follows:

Take of

Terebene ..	1 fl. oz.
Powdered Gum Arabic.....	30 grs.
Powdered Sugar.....	1 troy oz.
Yolk of Eggs.....	2
Syrup of Lemon.....	3 fl. oz.
Water.....	q. s.

Proceed as previously directed, only emulsify with a very little plain water, before adding successively the yolk of eggs and acid lemon syrup. If the eggs be not "new laid," it may be as well to beat up the yolks with about twenty or thirty minims of diluted phosphoric acid before stirring the same into the other ingredients, as before. Make up to eight ounces. Both this and the preceding mixture may be tinted, if desired, with a little saffron or caramel.

This mixture should contain about sixteen grains of citric acid to the fluidounce; therefore, if the lemon

syrup used is not strong enough in this respect, a little powdered citric acid must be added to make up the deficiency.

PASTILLES OF TEREBENE.

Take of

Terebene.....	80 to 100 Gm.
Gum Arabic.....	400 Gm.
Powdered Tragacanth.....	200 Gm.
Powdered Loaf Sugar.....	500 Gm.
Glycerin.....	30 Gm.
Oil of Lemon.....	12 Gm.
Eggs (white of).....	5 or 6.

Dissolve the oil of lemon in the terebene, and add the mixture to all the powdered gums and 100 grammes of the sugar. When thoroughly incorporated, emulsify with the smallest convenient quantity of water, and add the glycerin and the egg albumen, the latter having been well whisked. Transfer to porcelain or enamelled iron vessel heated by a water-bath, and, when warm, slowly sift in the fine sugar as it dissolves in the viscous fluid. Stir constantly, and evaporate until a little dropped upon a cold plate becomes, after ten minutes, of a sufficiently firm consistence. Pour out to the depth of about half an inch upon cold tin or porcelain plates, which have first been dusted over with finely-sifted dry starch. When cool, divide the stiff, dough-like mass into squares or diamonds of suitable dimensions, using a mixture of one part white sugar and three parts starch, perfectly dry and in fine powder, to prevent sticking. A small sugar-sifter, or "dredger," will be needed during this operation. These pastilles may be safely given to the youngest children, and for persons of old age are very efficacious in dislodging both phlegm and flatus.

AROMATIC TEREBENE FOR DISINFECTION.

Take of

Terebene ..	2 oz.
Eucalyptol.....	3 drs.
Thymol.....	20 min.

Mix.

Put up in "sprinkler" bottle, and impregnate small pads of cotton, wool, bran, "wads" of lint, blotting paper, etc., and hang them about the apartment some two and a half to three feet from the ground, especially in such situations where a draught from door or window is likely to cause currents of air to pass over them occasionally.

AROMATIC TEREBENE SPRAY.

The disinfecting mixture just mentioned, either by itself, or, preferably, dissolved in an equal bulk of strong alcohol, or Larbaestier's eau de cologne, is shaken up in an atomizer with ten parts of plain water. When "sprayed," a refreshing fragrance is imparted to the air, and septic fermentation cannot take place therein.

Reaction of Quinine and Quinidine with Chlorine or Bromine.

In connection with the paper on page 124, Dr. Weller gives some interesting details on the action of chlorine and bromine upon quinine and quinidine.

When chlorine water is added to the hydrobromide of quinine or of quinidine, the solutions will usually acquire a more or less intense red color. This color belongs to the same class as the well-known thalleioquine and other similar colors, and has been repeatedly noticed before, but no practical use appears to have been made of the fact.

Since bromine acts more promptly than chlorine, it is best to examine first the behavior of the two alkaloids towards bromine water. On adding a few drops of the latter to a neutral and highly concentrated solution of hydrochlorate of quinine or quinidine, which had best still contain some undissolved salt, there is at first produced a yellow precipitate which

rapidly disappears. After a short time, however, the liquid acquires a rose tint, which becomes gradually more intense, and finally has a magnificent cherry-red color. This color is not lasting, but disappears after a while, but a fresh addition of bromine water will easily reproduce it. The reaction succeeds still better if the solutions are slightly warmed before the bromine is added. In this case the color appears instantly when bromine water is dropped in. In dilute solutions, the reaction appears likewise, but much less prompt or intense, though even here it is hastened by warming.

Dr. Weller points out that this reaction is by no means as searching and delicate as the thalleioquine or Vogel's reaction, and that it will, therefore, not displace the latter. In presence of acids, the red color does not appear at all; the same happens if too much bromine water is added. This produces a copious, golden-yellow precipitate, which consists very probably of brominated substitution-products.

The same phenomena are observed, though not so promptly, when treating the free alkaloids, quinine and quinidine, in this manner.

The commercial salts of cinchonine and cinchonidine likewise give the reaction more or less intensely. But Dr. Weller could not produce it with the chemically pure salts.

Chlorine water produces the same result as bromine water, but less promptly or intensely. On the other hand, if added in excess, it does not produce a precipitate. Strong mineral acids prevent the reaction, but acetic or tartaric acids alter the red color only slightly. An excess of chlorine discolors the red solution, hence it must be added cautiously.

Solutions of quinine and quinidine which have been turned red by chlorine water show a peculiar behavior towards ammonia. If the red color had been produced by a very small quantity—2 or 3 drops—of chlorine water, ammonia produces in this solution a light rose-tinted precipitate, which retains its tint a long time, and, when warmed, runs together to a more intensely red-colored, resinous mass. On the other hand, if the color had been produced by the addition of a larger quantity of chlorine water, the rose-red precipitate is here first produced by ammonia likewise, but it soon turns green, and so does the liquid it is suspended in; in other words, the thalleioquine reaction takes place. As the amount of chlorine water is increased, the rose tint becomes less perceptible, and the green color appears the more rapidly.

If bromine water be substituted for chlorine water, the addition of ammonia likewise produces a rose tint, but it passes very rapidly over into green, even though but 1 or 2 drops of bromine water have been used.—Abstract from *Arch. d. Pharm.*, 224, 163.

The Chilean Pharmacopoeia.—A Chilean pharmacist, now attending the lectures quite regularly at the Paris School of Pharmacy, has charge of the publication of a national pharmacopoeia for Chili. The original intention was to have the work done in Paris, but the demands of Parisian printers proved so exorbitant that the job was given to a firm in Leipzig, Germany, whence the proof-sheets are sent here to be read, and returned after revision.—*Chem. and Drugg.*

To Disguise the Taste of Quinine Dr. Hugo Engel recommends a mixture with one grain of quinine, of one grain of chloride of ammonium, and four grains of powdered licorice root. The same proportion of chloride of ammonium must be used for larger doses, but ten grains of the licorice will suffice for ten grains of quinine.

ON A NEW THERMOREGULATOR WITH ELECTRIC ATTACHMENT.

MOST of the automatic thermoregulators heretofore proposed were constructed in such a manner that the supply of gas to the burner was regulated, or entirely shut off, by the expansion of a certain volume of mercury contained in a reservoir directly affected by the temperature of the apparatus to be heated.

It has been observed by Alexander Kaleczinsky that, when such a construction is used, the mercury in the reservoir is gradually volatilized and deposited as a more or less dense metallic layer in other portions of the glass portion of the apparatus, as well as throughout the india-rubber tube carrying the gas, and that it even reaches the burner, where it has been found (in the colder portions) in globules visible with the naked eye. It is evident, therefore, that a notable quantity of it must reach the flame of the burner, and thereby become volatilized in the room where the operation is going on, endangering the health of the operators.

Now it would be difficult to find a more suitable liquid than mercury, for regulating the supply of gas. The error in the previously constructed forms was this, that the reservoir of mercury was included in the heating apparatus itself, whereby the whole column of mercury acquired a high temperature, and became prone to volatilize. In the improved apparatus here described, the reservoir of mercury is outside of the apparatus, and the rise and fall of the mercury brought about by the expansion of air confined in the glass-bulb *A* inside of the apparatus. This bulb is connected by a very stout rubber-tube (of small bore) with the branch tube *e* of the regulator proper. Supposing the gas under the heating apparatus is lit, and the tube *a*, through which the gas reaches the burner, is pushed down to within a short distance of the surface of the column of mercury. As long as the faucet *d* is open, any expanded air, within the bulb *A*, will have a chance to escape, and the level of the column of mercury will not be affected. When *d* is shut, however, the expanded air will depress the mercury in *c*, causing it to rise in the inner funnel-shaped tube, and, when it has reached the orifice of the tube *a*, it will arrest the passage of the gas, permitting only a very small amount to reach the burner through the orifice *x*, so that the flame will not go out entirely. The temperature of the apparatus can be regulated to within one degree centigrade by the height to which the tube *a* is raised or lowered; and this height will remain uniform for this temperature at any subsequent time. [It will be convenient to graduate the tube *a*, so that it may be drawn up or pushed down to any one of the graduated divisions, each of which has been previously determined, by experiment, to correspond to a certain degree of temperature.]

Another form of thermoregulator, which may easily be constructed of ordinary laboratory glass-ware, is shown in Fig. 2. It is intelligible without further description, by comparing Fig. 1.

In connection with this apparatus is

shown an electric apparatus of general applicability. To construct it, take a thermometer tube with bulb, into which a platinum wire is fused, and which is open above. Introduce a sufficient quantity of mercury, and graduate the tube into degrees ascertained by comparing with a standard thermometer [at a known pressure of air]. *K* represents an electric bell, and

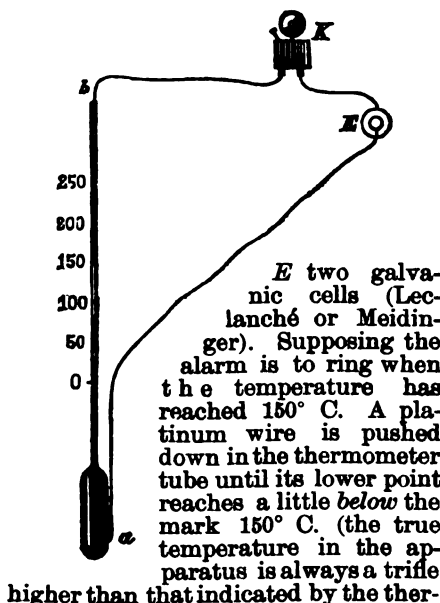


FIG. 1.

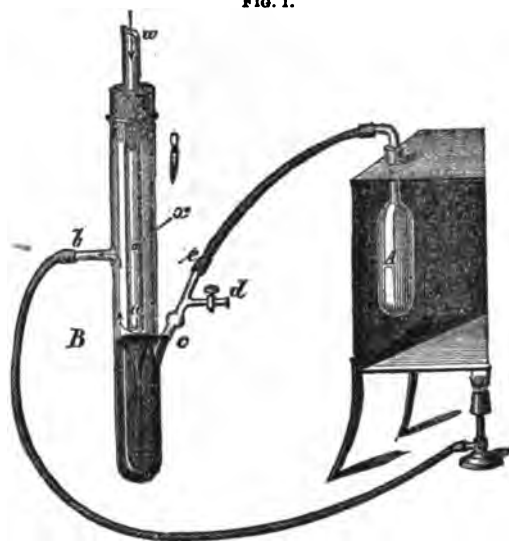


FIG. 2.

shown an electric apparatus of general applicability. To construct it, take a thermometer tube with bulb, into which a platinum wire is fused, and which is open above. Introduce a sufficient quantity of mercury, and graduate the tube into degrees ascertained by comparing with a standard thermometer [at a known pressure of air]. *K* represents an electric bell, and

It is best to surround both the open as well as the the standard thermometer with thin copper foil, in order to

distribute the heat more uniformly and rapidly.—After *Zeitsch. f. Anal. Chem.*, 1886, 190.

Indicator for the Volumetric Estimation of Phosphoric Acid.

THE estimation of phosphoric acid, by means of soluble salts of uranium, requires that, when the reaction is supposed to be near the neutralizing point, sample-drops be removed from the liquid after every fresh addition of the reagents, in order to ascertain the moment when the uranium salt is present in excess. It is usual to ascertain this point by testing the sample-drops with ferrocyanide of potassium, which will produce a reddish-brown tint. It is a common occurrence that the exact point is overshoot by the operator, and that the assay will have to be repeated in order to hit the right point.

This drawback is now promised to be set aside by a discovery made by Ordinsky, who ascertained that, when a solution of the coloring matter of cochineal is added to acetate of uranium, in presence of acetic acid, a characteristic green color is produced.

Consequently, if tincture of cochineal is added to the liquid in which the phosphoric acid is to be assayed, the first drop in excess of the uranium solution should produce the above mentioned tint.—*Bull. Soc. Chim.*, 45, 246.

[We said "should produce," instead of "will produce," because we have not tried the method ourselves as yet, but shall have occasion to do so shortly.—ED. AM. DR.]

Liquor Morphine Bimeconatis.

THOUGH the bimeconate of morphine is not often used in this country, yet it is occasionally prescribed, and the following note (from the *Chem. and Drugg.*) will be found of practical interest:

As prepared by Squire, the originator, and by others, this solution was of a cherry-brown color. The official solution, however, is colorless, or nearly so. In the official instructions for preparing this solution, no mention is made of filtration, and as filtration will often be necessary, it may not be amiss to draw attention to the fact that filter paper containing a trace of iron is totally unfit for this solution, iron being a common impurity of filter paper of commerce. It is necessary, before using an unknown sample of paper, to test it for iron. The usual delicate tests for ferric iron, ferrocyanide and sulphocyanide of potassium, are highly sensitive in this case. It is only necessary to place a drop of a dilute solution of either reagent on the suspected filter paper, and then moisten with any of the dilute mineral acids, when a blue or red spot, as the case may be, will indicate the presence of iron. Filter paper containing this impurity may be freed from it by washing with dilute nitrohydrochloric acid, and rinsing thoroughly with distilled water.

Tar as a Coating for Floors has been tried in Austrian military barracks, and has proven so valuable as a means for preventing accumulation of dust in cracks, and improving in other ways the sanitary condition of the rooms, that its application is being greatly extended. It requires renewal but once a year, and is very inexpensive. Its sombre color is its only disadvantage.

PACKING-CASE OPENER.

WE find in one of our English exchanges a description of a tool which would be of great convenience in the store-room of a pharmacist. We are not aware that it is to be had ready-made in this country, but it can readily be constructed by any competent blacksmith.

It is intended for opening packing-cases and boxes and drawing nails, by which the destructive operations of the mallet and chisel or wedges and bars, usually employed, may be avoided, and quicker and better work done. It is (as the illustrations show) most simple in construction. The square piece of metal projecting over the joint or pin enables the tool to be used as a hammer. The jaws, it will be seen, are of unequal length, the smaller one dropping into a slot in the larger. The front then forms a forked or double-toothed wedge, which can be driven in between the boards to be separated, or under a nail-head. By pressing the ends of the arms together, power is applied to open the jaws, and thus to raise the lid or to pull the nail upwards. As the faces of the jaws press flatly upon the wood, and not upon the edges, the damage generally done to a case in this way is avoided.

Menthol.

UNDER the name of peppermint stearecence, stearoptene of peppermint, and peppermint camphor, menthol has been known and described since the latter part of the previous century, and tradition has it that the Chinese and Japanese have known this substance for centuries; I am informed by a Japanese gentleman, Mr. Moriyuma, that menthol is mentioned by Japanese historians as being in use, as a favorite and universal domestic remedy, at least two centuries B.C. Suffice it to say, however, that the earliest recorded investigations upon the composition of this substance were made upon menthol obtained from American oil of peppermint.

The invasion of cholera into North Europe, and the enormous consumption of oil peppermint in consequence, resulted in a considerable importation of the American oil peppermint; this American oil, from *Mentha piperita*, possesses the property of congealing at a temperature in the neighborhood of zero, and thus furnished the prismatic crystals of peppermint camphor. It was to these crystals, isolated in this manner, and obtained from American oleum *Menthae piperitæ*, that Dumas turned his attention, and in 1832 the results of his investigations were made known: he determined the composition, fusing point, boiling point, described its properties and some of its transposition products.

Dumas was closely followed by Blanchett and Sell, Walter and Kane, who verified the formula advanced by Dumas and agreed with him in all respects, except the fusing and boiling points, in which latter respects they were widely divergent.

In 1861 and 1862, the camphor of peppermint, known as constituting the stearoptene of the essential oil of *Mentha piperita*, was then obtainable in large quantities; it arrived from Japan in coarse earthenware jars, simply protected by paper covers, and consisted of a mass of small, white, fragrant prismatic crystals resembling magnesian sulphate, with which salt it was then said to have been adulterated.

Gorup-Besanez and Oppenheim now gave this substance more extended examination than had heretofore been made; they verified the formula es-

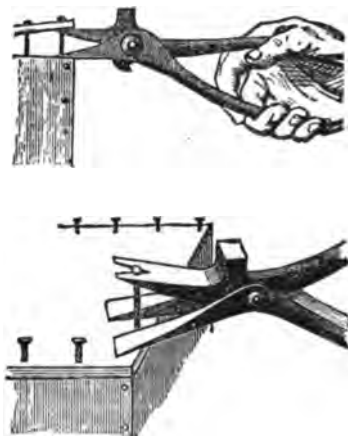
tablished by Dumas, which had previously been verified by Walter in 1830, and Oppenheim after elaborate research proved this peppermint camphor to be a monatomic alcohol, and proposed the name mentholic alcohol or menthol be substituted for that of peppermint camphor.

Though it appears to have been an article of commercial importance at this date, its uses were slight and the demand was light.

Various travellers in China and Japan have made mention of the use, by the natives, of a semisolid or viscous liquid peppermint for neuralgic troubles, and samples of solid or liquid oil were brought home as curiosities, and exhibited as Chinese or Japanese headache cure.

This cure was generally met with in long, heavy, flat glass vials and was a dark green or amber-colored fluid, quite viscous at ordinary temperatures, often, however, a moist crystalline mass. In 1871, this remedy was brought into more prominent use and notice, through its use by the Chinese of San Francisco, and was made the subject of an investigation by Flickiger in the same year.

In 1874, there appeared in the market at London a consignment of both the solid and liquid oil from Japan, and Mr. John Moss made an examination of the same, closely followed by Mackay, and later Becket and Wright. During 1876 at the Centennial Exhibi-



Packing-case opener.

tion a beautiful exhibit of menthol crystals was made by Sachse & Co., of Leipsic. Since this year menthol has steadily gained in importance.

In 1879, Christy, of London, forwarded to Parke, Davis & Co. an important consignment of menthol, soon followed by other shipments. Early in 1880, Fritzsche Bros., of New York, received a large consignment of menthol, and as this product rapidly gained in popularity, their shipments received were enormous, they controlling in fact the bulk of the article entering this country, as does Christy in England, to whom is said to be due the honor of introducing the menthol cone.

In 1881 Dundas Dick introduced the now famous cone to successful use in this country, being rapidly followed in this venture by Parke, Davis & Co., F. Stearns & Co., and Jno. Wyeth, until to-day there may be found in the market some thirty makes of cones of divers grades of purity; the pioneers having, however, faithfully guarded the purity of their goods.

The bulk of the menthol of commerce is consumed in the manufacture of cones, these cones being largely adulterated with such substances as paraffin, salicin, sugar, glucose, stearic acid, and white wax; the average of adulterant is 10%, the goods of reliable houses being as a rule pure and of good quality.—From a communication by CHAS. L. COFFIN, of Detroit, Mich.

Shellac.*

In the central provinces of India, especially in the thick jungles, the coccus lacca insects may be seen dwelling together in thick-set groups on the branches and twigs of *Zizyphus Jujuba*, *Ficus religiosa*, *Butea frondosa*, besides other trees and shrubs belonging chiefly to the Leguminosæ order. Each insect incrusts itself over with a resinous substance, forming within a cell containing larvæ and a deep coloring matter, the dead body of the parent being itself the cell. Hundreds of these are piled together, adhering to a twig, and in this condition it is termed stick-lac, and contains about 70 per cent of resin, 10 per cent of coloring matter, and the rest débris.

The collecting of stick-lac and the making of shellac, button-lac, sheet-lac, and lac dye is an industry carried on by the Hindoos in the districts of the central provinces. In order to obtain the largest quantity, both of resin and coloring matter, the stick-lac is collected before the larvæ emerge from the cells, else with their flight they carry away the greatest part of the dye coloring.

Since the advent of the aniline dyes, lac dye is but little in demand. The larvæ are allowed to mature, as they do not interfere with the quality or quantity of the resin portion. It is chiefly this circumstance that keeps down the price of shellac, there being, consequently, more insect workers than formerly.

The process of dealing with stick-lac for the making of shellac and lac dye was witnessed by the writer when in India, and is as follows: The first part of the process is to separate the lac from the twigs. This is done by two women—one turning and the other feeding a primitive-shaped wooden mill. When a heap is formed (about a bushel in quantity), it is winnowed in a rustic-looking winnower, the lighter débris separating; the remainder is then hand-picked. The process of grinding and winnowing is repeated until the whole is reduced to small, orange-colored nodules. When in this condition it is termed seed-lac; the bright garnet-colored pieces, being few in number, are now picked out and set aside for native ornaments. The seed-lac is then placed in a large earthenware pan, and with it some water. A woman steps into the pan, steadying herself against the mud-wall with her hands, then turning violently to the right and left, in order to keep the lac in a continual state of motion against her feet and the sides of the pan for some time, the other woman occasionally adding more water until the vessel is full of a dark-colored liquid. After settlement, the dye water is removed into another earthenware pan, and the lac again washed until the water runs away clear.

Lac Dye.—The treatment of the colored water for the purpose of obtaining from it the lac dye is very simple. After straining, lime-water is added, which precipitates the dye. The water is then drained off, and the dye drained through cotton cloth; from this it is transferred to compressible frames, containing strong iron plates, and reduced by a native screw-press to solid sheets of dark purple dye, about a quarter of an inch thick; these are cut up into cakes and stored till dry enough for packing, and then forwarded to Calcutta for sale in the bazaars. The utilitarian value of lac dye over cochineal in a humid climate, especially in dyeing the scarlet cloth of the soldiers' coats, lies in its power to resist the action of human perspiration.

Shellac.—The manufacture of shellac is an entirely distinct process. The

* By J. BOSISTO. From *Australasian Journ. Pharm.*, February.

seed-lac at the bottom of the pan is removed, dried, and sifted. The finer dust, which is highly inflammable, is removed. The lac workers of India make it up into bracelets and ornaments of various kinds.

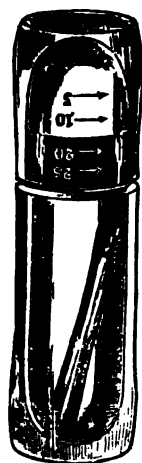
The coarse lac, which is to be made into shell, is put into long sausage-shaped bags of about two inches diameter, made of cloth like American drill. Under a shed is a charcoal fire, about two feet long and six inches wide; alongside of the fire-place is a bamboo pole, about three feet long and four inches diameter, filled with warm sand, inclining at a slight angle to the ground. On each side of the fire-place is sitting a man, or more generally a woman, each holding an end of the sausage-roll-looking bag about twelve inches high over the clear charcoal fire, turning the roll or bag briskly until the lac begins to ooze through the interstices of the cloth; the bag is still kept twisted until a coating of soft lac covers the outside. It is then removed from the fire, and a small disc of lac is placed here and there over the surface of the bamboo by a rapid turn of the wrist. A third woman is sitting at one end of the bamboo, holding in both hands a strip of aloe leaf, resembling very much a thin magic wand; this she pushes forward over the soft lac, repeating the motion three or four times, when a thin film of the lac covers over the round surface of the bamboo, which is immediately transferred into an open basket; the lac, drying rapidly, cracks up into many pieces—this is shellac.

Button-lac is simply shellac without spreading.

Sheet-lac is made in a similar manner to shellac, only the sheets are much thicker, and the woman removing it from the bamboo in a supple condition and with hands stretches it over the fire in order to remove the wave-like furrows which are impressed on it by the fibrous surface of the aloe-leaf. While doing this it is not uncommon to see the woman, who performs her work intelligently, lift the hot sheet to her mouth and bite out any foreign substance, such as dirt or sand, filling in the hole so made by a rapid movement of her hand over the sheet. The average rate of wages is an anna and a quarter ($1\frac{1}{4}$ of a penny) per day.

PESTLE AND MORTAR FOR HYPODERMIC SOLUTIONS.

JOHN WARD COUSINS, a London doctor, suggests a diminutive mortar for solution of tablets for hypodermic use, which is shown in the adjoining illustration. The two parts of unequal length have a tight-fitting joint, and the tablet with the proper quantity of water having been inserted with the little glass pestle, the whole is shaken. The solution is then to be emptied into the small end for facility in drawing it into a syringe. [It strikes us that there is a most remarkable degree of trouble and expense involved to accomplish what can be done just as well in a small glass vial. If the



tablets furnished to British practitioners for hypodermic use are so intractable that they require contact with a pestle for their solution, we would suggest that they try some of those made in this country.—ED. AM. DRUG.]

Mines of Cinnabar Ore containing sixty-nine to eighty per cent of pure mercury have recently been discovered in the mining region of the Don, in Russia.

The New Cinchona Plantations in Guatemala.

FROM an interesting work on Guatemala, just published,* we take the following passages giving an account of the new enterprise of cinchona cultivation in this country.

During the residence of Dr. Stoll in Coban (altitude 4,357 ft.), the capital of the Department of Alta Verapaz, he visited the cinchona plantations started by Messrs. Sarg & Co., which had found such favor in the eyes of Government that they were distinguished by a premium. The following information was obtained by the author on the spot.

The first attempts at cultivation were made in 1877 with seeds of *Cinchona succirubra*, originally derived from the East Indies, and furnished by Kew Gardens. Of these seeds, 80 proved successful, but only 14 of the young trees finally survived. In 1879, seed of *Cinchona officinalis* was obtained directly from Ceylon, and this proved very prolific. The young plants were transferred during January and February of 1880 into open grounds, and prospered so well that they constituted the majority of the plantation at the time of Dr. Stoll's visit. They were then 12 feet high, and the stems 2 inches in diameter. Subsequently, experiments were made with *Cinchona Calisaya*, which were less successful; also with *Cinchona Ledgeriana*, of which about 100 trees survived.

The method of cultivation adopted by Sarg & Co. is as follows:

The seeds are propagated in boxes, and the young plants allowed to remain there until they are several inches high, that is, until they are 8 to 12 months old. They are then transferred directly into the open ground. On account of their tenderness, careful personal attention must be bestowed on them while in the shelter. After being transferred to the open air, they give but little further trouble. They are always planted in the coffee plantations, or *cafetales*, being set between the rows of coffee trees, in distances of $3\frac{1}{2}$ varas (about $3\frac{1}{2}$ yards). The lateral buds are usually cut off, so as to prevent the formation of scars.

After 8 years, bark may be collected. For this purpose, the bark is taken off the stem or trunk of the tree from the twigs down, and the whole tree then torn from the ground with its roots, which are also stripped. The bark is always preferably taken from the live trees, because it clings very tenaciously to the stem after the tree is dead.

Cinchona Ledgeriana does not succeed well in Coban, which is not situated high enough. The most advantageous is *Cinchona officinalis*; and for lower situations, *Cinchona succirubra*.

Dr. Stoll met a Mr. Forsyth, an Englishman, in the capital of Guatemala, who had arrived from Ceylon with the special object of travelling through the country and locating cinchona plantations at suitable places. He succeeded in obtaining the support of Government for this purpose, which dispatched him to Ceylon with 3,000 pesos, for the purpose of bringing over seeds and plants. From later information, the author learns that the object has been attained, not less than 1,553,000 seedlings having been planted (up to December, 1884) upon various sites of the western slope of the mountain chains. These are distributed among the following districts: in Finca, upon the plantation "El Porvenir" (belonging to President Barrios) 600,000; "El Tumbador," 294,000; in Chalhuitz, 118,000; in Costa-Cuca, 454,000; in Pueblo Nuevo, 82,000; and in Palmar, 5,000.

* Guatemala. Reisen und Schilderungen aus den Jahren 1878-1883. Von Otto Stoll, M.D., and Lecturer at the University of Zurich. (Illus.) 8vo, Leipzig, pp. 386 seq.

CORRESPONDENCE.

MENTHOL CONES.

The Editor of the American Druggist.

SIR:—To prevent any misconception as to the low price of menthol in Europe, I ask you to allow me to state that I attribute this almost entirely to the quality of the crystalline substance sold and used for cones. My reason for this statement is as follows:

The press in this country have agreed that the "dry white crystal" that is produced by manufacturers in Europe and also in Japan, when worked up into cones in England, does not produce the effect on the skin that the native-made China and Japan crystal did when we first introduced it and used it in a liquefied form and also in cones.

The oil from the *Mentha arvensis*, that had all the crystalline matter extracted, having been sold as Japan oil of peppermint, has also damaged the reputation of this oil.

I was lately through some of the stores in Holland and there found the German form of cones; I was informed that the sale had entirely stopped, as the buyers complained that they could get no effect with them on the skin.

I asked a gentleman who was going to Germany to make inquiries there, and he learned that the chemists sold very few cones now, whereas previously they sold a large number to the students who now complain that they cannot get the effect on the skin and that it does not draw off the headache; it only produces an abrasion of the skin without giving any lasting effect.

They were asked to test the difference between the cones they had been using and those made here from menthol crystals imported by the American Trading Company and they found at once how great the difference was.

Menthol is one of the standard medicines and is most used by the natives of China, Japan, and India, and it has stood the test of time. It is no "new invention" or advertised article that has its day."

There is this great difference, the natives go to the opposite extreme of the "dry white re-crystallized camphor," for they prefer a semi-liquid form; even in cold weather if it has formed into crystals they liquefy it by heat.

The conclusion I draw is that as soon as the market is clear of the "faked up" menthol, and retail chemists understand the reason of the falling off of their sales, the public will return to this most efficacious and useful household remedy that has stood the test of hundreds of years in the East.

Yours faithfully,

THOS. CHRISTY.

LONDON, May 4th, 1886.

Hopeine.

SIR:—Our attention has been directed to an article in your valuable medium on the subject of hopeine, and we should feel obliged if you would allow us to take exception to the statement that we were makers of hopeine, for if not contradicted at once, we should be placed in a false position both in America and Europe. Our connection with hopeine was inevitable, on account of the leading part we have always taken in the introduction and importation of new drugs and remedies; but not being ourselves manufacturers of any pharmaceutical preparations, we cannot hold ourselves responsible for their composition. When a new drug or preparation is brought on the market, we are at once called upon to supply it, and hopeine, so soon as it was advertised by the

sole manufacturers, The Concentrated Produce Co., Limited, of London and Brooklyn, who by a letter to us dated February 2d, 1886, take the entire responsibility of their statements and of the preparation known as hopeine, it was ordered from us.

Our position and action in this matter has been fully explained by us to our friends, Mr. F. Stearns, Detroit; Prof. Lloyd, of Cincinnati, etc., and we have received great assistance from Professors F. Spencer Baird and Asa Gray, in collecting such information as has enabled us to obtain through Mr. J. W. Colcord, of Lynn, a supply of American wild hops, to have the question of their yield of the alkaline hopeine clearly defined.

We remain, sir, yours truly,
THOS. CHRISTY & Co.

LONDON, June 1st, 1886.

[The above communication is accompanied by the following circular, which should be read in connection with it.—
ED. AMER. DRUGGIST.]

10, Camomile street, }
LONDON, E. C., Feb. 2d, 1886. }
Messrs. Thos. Christy & Co., 155, Fen-
church Street, E. C.

DEAR SIR:—In reply to your inquiry, we guarantee that the hopeine supplied to you on 8th Dec., 12th Dec., and 21st Dec., 1885, and 19th Jan., and 21st Jan., 1886, was similar in every respect to the article we supply to our other customers, including Messrs. Adrian & Co., of Paris; and that, as stated in our circulars, hopeine is prepared exclusively from hops.

We are, dear sir, yours truly,
CONCENTRATED PRODUCE CO.,
— W. WILD. SPRINGMUEHL.

Antiseptic Powder.

Iodoform,
Powdered Cinchona,
Powdered Benzoin,
Powdered Carbonate of
Magnesium..... equal parts.

Saturated with oil of eucalyptus.
Used as an application to wounds.—
LUCAS-CHAMPIONNIERE, in *Bull. de la
Soc. de Chir.*

Delacour's Lip Salve.—

Powdered Nut-galls,
" Pomegranate bark,
" Sumach..... āā 3 i.
" Myrtle leaves,
Sulphate of Zinc..... āā 3 ss.
Beeswax,
Spermaceti,
Oil of Sweet Almonds āā 3 i.
Tincture of Benzoin (dil.).... 3 ij.
Mecca Balsam..... gtt. xij.
Ointment of Rose..... 3 iv.

M.

Mercury and Urea for Hypodermic Use.

Urea..... 4 grains.
Corrosive Sublimate..... 15 "
Distilled Water..... 8 ounces.

Fifteen minims to be injected daily.
—SCHULTZ, in *Deutsch. Med. Woch.*

The so-called "Double-Chloride of Gold Cure" for drunkenness is said to consist of

Chloride of Ammonium..... 1 grain
Aloin..... 2 grains
Compound tinct. of Cinchona... 8 ounces
Water, enough to make..... 4 "

Paper of proper thickness is rendered transparent by soaking in copal varnish. When dry it is polished, rubbed with pumice stone, and a layer of soluble glass is applied and rubbed with salt. It is stated that the surface is as perfect as glass.

Danger from the Use of Nickel-Plated Cooking Utensils.—According to the Sanitary Counsel of Vienna, after a careful chemical examination of nickel and nickel-plated utensils, the use of such appliances are declared to be open to serious objection.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,730.—Prescription Difficulty (P. S.).

This correspondent writes as follows: "I wish to call your attention to the following prescription received by me some days ago:

℞ Morphin. Sulphat. 3 gr.
Acid. Tannic..... 40 "
Acid. Carbolic..... 20 "
Butyri Cacao..... q. s.
Fiant suppositoria ix.

"Now it may seem strange if I say that these suppositories cannot be made. If the carbolic acid be added drop by drop, after all the other ingredients are mixed dry, and then a very gentle heat applied, a gummy, tenacious mass results, becoming very brittle and hard in a very short while. A carbolic acid in the crystallized form, and of 95%, and only the purest grades of the other ingredients were used, and like results as aforesaid obtained. By the most careful manipulation, and by trying four or five different ways, it was impossible to make a suppository satisfactory to the physician.

"Tannic acid is known to be precipitated from its solutions by certain acids. It being a glucoside, and yielding glucose by boiling with dilute acids, this conversion into glucose may take place more quickly when it is slightly heated with cacao butter and a small quantity of carbolic acid. I would like to have an explanation, how it is that tannic and carbolic acids when brought together, as in the above prescription, form so tenacious a mass; also whether my surmise as to the splitting up of the glucoside is in accordance with the facts?"

Regarding the last point, we would say that, in our opinion, there can be no splitting up of the tannic acid (beyond perhaps a minute trace), because all glucosides require for this purpose a certain amount (usually from 1 to 3 molecules) of water.

Now the only water that is likely to be present in the ingredients mentioned above is the minute quantity used for liquefying the carbolic acid, say 5%, which will make just about 1 drop, a small proportion existing as moisture in the tannic acid, and the very small quantity existing in the crystals of sulphate of morphine. But the latter will hardly come into play, as there is nothing present to decompose the morphine salt. The drop or minim of water present in the mixture is, however, utterly insufficient to convert more than a trace of tannin into glucose and gallic acid. This cannot be the explanation. Before trying another, let us try to make the suppositories *without heat*. From a previously prepared mixture of 9 parts of butter of cacao and 1 part of white wax, melted together and cooled, prepare fine shavings or raspings, weighing about 200 grains. Triturate about one-half of this, in a mortar, with the carbolic acid, which should have been liquefied by a gentle heat and not by the addition of water; in other words, it should be an acid which is crystalline at ordinary temperatures. Brisk trituration will soon render the mass homogeneous. Now gradually incorporate the tannic acid, keeping up the trituration, until a pale yellowish, perfectly smooth mass is produced. This may be much facilitated by transferring the mass to a marble slab and rubbing it out into a thin layer with the spatula; any little lumps will thereby be seen, and can be made to disappear.

Now mix a portion of the remaining butter of cacao with the morphine, and gradually incorporate the remainder of the butter of cacao. Finally add this portion to that previously prepared, and mix them thoroughly on the marble slab. Finally roll the mass out, cut it into the proper number of pieces, and shape each one by rolling with the spatula.

If our correspondent will try this method (even with plain cacao butter), he will find that it accomplishes the object.

Now as to our explanation. In the first place, it is necessary to avoid converting the sulphate of morphine into the tannate, before the salt is finely divided and diluted through the mass. The tannate of morphine is apt to form a sticky lump which it is difficult to divide afterwards. Then again, it is not advisable to warm the mass. Tannic acid is not soluble in oils, fats, and most liquids which dissolve oils. The cacao butter and carbolic acid are soluble in each other and perfectly miscible. But if the tannic acid is attempted to be distributed through the melted mass, it will agglutinate in lumps, which is facilitated by the minute proportion of moisture usually present in it. We consider the failure of our correspondent due to the bringing together antagonistic substances under circumstances permitting each to display its obstreperous character to the utmost.

No. 1,731.—Testing the Purity of Raw and Boiled Linseed Oil.

In reply to the query of our correspondent, we will give what we consider a sufficient array of proof.

A. Raw Linseed Oil :

1. Characteristic odor and taste. This cannot be described, but is familiar to any one who has handled the genuine oil.

2. Color golden-yellow, if cold pressed; darker, if hot pressed.

3. Spec. grav. 0.9385 at 10° C.; 0.9364 at 12° C.; 0.9350 at 15° C. (59° F.); 0.9325 at 20° C.; 0.930 at 25° C. (77° F.).

4. Congeals at -27° C. (-16.6° F.) to a firm, yellow mass. Begins to boil at 130° C. (266° F.).

5. Soluble in 1.5 parts of ether, 40 parts of cold 90% alcohol, 5 parts of boiling 90% alcohol, and 5 parts of cold absolute alcohol.

6. When linseed oil is mixed, in a test-tube, with an equal volume of nitric acid (sp. gr. 1.185) and a few pieces of copper foil or a little mercury is added, the oil should not become solid, or semi-solid on standing for several days (absence of non-drying oils), and the color of the oil should remain unaltered or nearly so (a yellowish-white, or pale-yellow color points to cod-liver oil, lard oil, etc., and a yellowish-brown to reddish-brown color to cotton-seed oil, dark qualities of cod-liver oil, and crude rape oil; a red to deep-red color points to sesame oil).

7. Spread a thin layer of the oil upon a flat surface of glass or porcelain, and expose it to the air. It should gradually dry up and form a tough, transparent skin within 2 or 3 days, which is no longer soluble in alcohol.

Other tests have been given, but many of them have no further merit than to indicate that the oil may be suspected; some of them are of doubtful utility. Certain manufacturers in Europe who have to purchase linseed oil, often rely on the lead test, which is performed by boiling a portion of the crude oil with white lead, when the latter should not become blackened. The test is quite proper if it is intended to prove the presence of sulphur, but while this may be due to the oil being adulterated with rapeseed oil (which usually contains sulphur compounds), it may also be due

of the fact that the oil was extracted from the seed by means of bisulphide of carbon, which often holds a little sulphur in solution.

B. Boiled Linseed Oil.

When linseed oil is boiled for some time by itself, a portion of the linolein (the linoleate of glyceryl) is converted into the anhydride of linoleic acid, and the corresponding quantity of glyceryl is converted into glycerin which separates. The anhydride which is formed dissolves in the remainder of the linseed oil.

It has been proposed to show the presence of crude or *unboiled* oil, in boiled linseed oil, by some method of estimating the glycerin, which is best done by saponifying the oil, decomposing the soap, treating the aqueous solution, which must contain the glycerin, with permanganate, which changes the glycerin to oxalic acid, and estimating the latter as calcium oxalate.

This method is unobjectionable, but it goes too far, because the whole of the glycerin is not removed from every boiled oil. It might be rendered of practical use, if a limit could be decided on, beyond which the amount of glycerin should not extend.

A large proportion of boiled linseed oil is prepared with the intervention of oxide of lead; hence this is liable to be present, and must not be regarded as an impurity.

Borate of manganese is also often used to prepare a rapidly-drying linseed oil. Not unfrequently this substance is added to unboiled oil, or a mixture of boiled and raw oil, and the product sold as "boiled oil." When borate of manganese has been found in the oil by analysis, it will be advisable to estimate the amount of glycerin the oil is capable to yield, in order to obtain an approximate idea as to the proportion of raw oil originally present.

Both the raw and the boiled linseed oil are frequently adulterated with rosin oil. This may be detected by mixing a sample of the oil with concentrated sulphuric acid (sp. gr. 1.845), which will produce a dark-brown clot with the raw oil if pure; but if rosin oil was present, a reddish-brown spot will quickly form, which retains its tint for a long time, with a peculiar scum formed over it. In boiled oil, the detection of rosin oil is difficult and often impossible.

The best practical test, after all, that can be applied to boiled linseed oil is the rate at which it dries. For, in the end, it matters but little whether it is pure linseed oil or not, if it will only dry up rapidly to a tough skin. A thin layer of it spread upon glass should dry up, within twenty-four hours, to a skin which, though perhaps still soft, cannot be wiped off, and should be entirely hard after another twenty-four hours.

No. 1,732.—Ammoniacal Solution of Oxide of Copper (W. A., N. Y.)

One of our readers who had read the original of the note on indestructible paste for closing letters (see elsewhere in this number), asks us how the solution of oxide of copper in ammonia is to be made. He tried to dissolve cupric oxide in ammonia, but failed to obtain a liquid which would dissolve cellulose or cotton.

Cupric oxide is not soluble in water of ammonia, unless a few drops of acid or some other ammonium salt (as the carbonate) is present. In this case, a deep-blue liquid will result, which contains a basic salt of copper. This is, however, not the liquid wanted; at least it has only feeble solvent power upon cellulose.

The solvent for cellulose may be obtained in various ways:

1. Introduce metallic copper into a capacious vessel, and pour upon it

enough water of ammonia to partly cover it. Open the vessel from time to time, to give free access of air. The ammoniacal liquid will gradually assume a blue color, and contain in solution cupric oxide.

2. Place copper turnings, or copper wire, or copper clippings, into a long narrow glass percolator, or into the broken-off neck of a retort, or into a long glass adapter, and pour upon it strong solution of ammonia. The neck of the apparatus may be closed with a rubber cork, containing a glass tube provided with a piece of rubber tube and pinch-cock, or with a stop-cock. Let the liquid run through gradually, and then pour it back again. Repeat this, until a deep-blue solution results. The addition of a few drops of solution of chloride of ammonium hastens the process.

3. Precipitate sulphate of copper with sodium carbonate. Dissolve the resulting basic carbonate of copper in concentrated water of ammonia.

The resulting solution is capable of dissolving cellulose at ordinary temperature. Cotton is dissolved within about half an hour; silk within about twenty-four hours. Upon wool it exerts no solvent action whatever. For this reason the solution is often used as a test for fabrics.

The solution of cellulose may even be filtered, after it has been sufficiently diluted with water. On adding an acid or a salt to the solution, however, the cellulose (disorganized) is precipitated again.

No. 1,733.—Mercurial Ointment (E. P. S., M. D., Kansas).

The following communication, received by the publisher of the Pharmacopœia, has been handed to us for a reply:

"Will you, through the proper person, get for me the correct formula for Unguentum Hydrargyri, or Mercurial ointment, see 6th Ed. U. S. P., p. 367, the last ingredient given in the article we are supposed to be making, of which we take 100 parts to make 1,000 parts of itself. This is, of course, an error, and it is what we want corrected, for I do not believe in homeopathic dilutions being stronger than the parent article."

This is a fair specimen of much of the criticism made of the text of the Pharmacopœia, by persons who will not take the trouble to inform themselves concerning matters of which they are ignorant or in doubt, before expressing an opinion. If the writer of the above will take the trouble of reading the formula and directions carefully, and will then read the article on mercurial ointment in the recent editions of either of the dispensaries, he will probably reach a different conclusion.

We may here remark that we have been often impressed with the number of people who go through life with their eyes shut, so to say, and who stumble over opportunities for acquiring information, without stopping for even a few moments to find out what the true nature is of the thing with which they have come into contact. They behave, under such circumstances, much like a skittish horse which sees an unfamiliar object in the road, and without stopping to learn what it is, shy at once, and run away from it. The result is usually quite similar to that which accompanies the above correspondence. They make trouble for others, and injure their reputation for intelligence.

No. 1,734.—Corn Remedy (Delta).

We are asked to furnish a formula for an effective corn cure, made with vaseline as a constituent, or any ointment that will do its work effectually and speedily.

We do not think that an effective

corn application can be made with vaseline, because this remains too soft, or will liquefy by the heat of the body, particularly when the foot is encased in a shoe. The best kind of application will be one which remains for some time in contact with the corn. Among those which have been reported as really efficacious are the following:

1. Gezow's Corn Cure.* (See New Rem., 1882, 85.)

Extr. Cannabis Indica 10 gr.
Salicylic Acid..... 50 gr.
Collodion..... 1 fl. oz.
(Quantities slightly altered.)

Mix and dissolve. It is applied by means of a camel's-hair pencil, so as to form a thick coating, for four consecutive nights and mornings. The collodion at once covers and protects the corn from friction. The Indian hemp acts as an anodyne, and the acid disintegrates the corn, so that after a hot bath on the fifth day, it will usually come out, adhering to the artificial skin of collodion.

2. Another similar preparation, also suggested by a Russian apothecary, is the following:

Turpentine..... 30 gr.
Salicylic Acid..... 45 gr.
Collodion..... 1 fl. oz.

3. Baudot's Corn Plaster.

Resin Cerate 600 gr.
Galbanum Plaster..... 600 gr.
Subacetate Copper..... 280 gr.
Turpentine..... 75 gr.
Creasote 45 gr.

Mix and make a plaster.

There are a number of proprietary corn plasters which contain nearly the same ingredients as the preceding, merely ringing the changes.

4. Laroche's Corn Plasters.

Olive Oil 80 parts.
Yellow Wax..... 10 "
Wheat Flour..... 90 "
Acetic Acid..... 60 "
Boric Acid..... 30 "
Oil Lavender..... 8 "
Vinegar..... 80 "

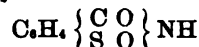
Mix. Apply to the corn for 24 hours. This is a proprietary preparation, which has the above formula, according to Hager.

5. Vomacka's Corn Remedy was published in our April number, page 80.

No. 1,735.—Saccharin (Several Inquirers).

We have already, on several occasions, noticed this substance, which must not be confounded with the chemical individual heretofore known as *saccharin* (the anhydride of saccharic acid, C₆H₄O₆). It is rather unfortunate that the discoverers chose the name *saccharin*, and thereby caused confusion among chemical terms. If they desired to adopt a popular name expressing the idea of *sweetness*, some derivative of the Latin *dulcis*, or the Greek γλυκύς might have been chosen. Though we have already several such derivatives applied to chemical individuals, namely, *dulcite* (also called *dulcin*, *dulcose*, etc.) and *glycin* (also called *glycocol*), it would not have been very difficult to ring the changes on these terms. Hager states that he shall apply the term "*saccharinin*" to the substance.

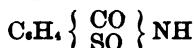
The *saccharin* recently discovered is a derivative of the benzol-series, and is properly the anhydro-ortho-sulphamine-benzoic acid, or the sulphimide of benzoic acid, or benzoyl-sulphonic-imide, and its constitution is expressed by the symbols



The substance was discovered by Constantine Fahlberg, of New York. The starting-point is toluol—C₆H₄CH₃—a constituent of coal-tar. This is first treated with concentrated sulphuric acid at a temperature not ex-

* Remington, in his *Practice*, page 1,024, calls this Liebig's Corn Cure, evidently by a *lapsus penna*.

ceeding 212° F., and is thereby converted into two toluol-sulphonic acids $C_6H_4.CH_3.SO_3H$, which are first combined with calcium and are then converted into the sodium salt. The latter is mixed, when dry, with phosphorus trichloride, and a current of chlorine passed over the mixture, under constant stirring. When the reaction is completed, the oxychloride of phosphorus produced thereby is distilled off, and the mixture of remaining toluol-sulphonic-chloride ($C_6H_4.CHSO_2Cl$) strongly cooled. This causes the separation of crystals of the *para* compound, while the *ortho* compound remains liquid, and is separated by a centrifugal machine. The latter is now treated with dry ammonia or mixed with carbonate of ammonium, and thereby converted into ortho-toluol-sulphimide ($C_6H_4.CH_3.SO_2NH_2$), which is difficultly soluble in water, and is freed from chloride of ammonium by washing with water. Finally, the *ortho* compound last obtained is oxidized by being introduced into a dilute solution of permanganate, care being taken that any free alkali or alkaline carbonate produced is neutralized by the cautious addition of an acid. The resulting product is then the potassium salt of the product desired, which remains in solution. The latter having been separated from the manganic hydrate, it is treated with an acid which causes the separation of crystalline benzoic sulphimide or "saccharin":



The chemical properties of this substance require careful study, as it is quite likely that it will be much used for artificially sweetening articles of consumption or medicines.

No. 1,736.—Cinchonamine [and Euphorine] (Qu.).

Our correspondent asks where he may obtain the alkaloid cinchonamine, or salts of it, as he wants to try it as a precipitant for nitric acid, for which purpose it has been highly recommended, as it forms a nearly insoluble compound with it.

We have been looking for some of this substance ourselves, but, beyond a small sample furnished to us by a private party, we have not heard of any being for sale here at present. We have sent to Europe for some, and in a short time it will be obtainable, we believe, from dealers in chemicals and reagents.

In connection with the above, it will be of interest to state that a still more insoluble nitrate has recently been found by Dr. Otto N. Witt (*Journ. Chem. Soc.*, 1886, 391 sqq.). This chemist has discovered a new series of coal-tar colors of very remarkable properties, among which their exceeding stability and feeble solubility are most noticeable. The new base has been named by him *euphorine*, and the nitrate of this is absolutely insoluble in water, even when boiling. All its salts are, however, partly decomposed by water, except when an excess of acid is present, when they are quite stable. Whether this substance will be available for the purpose of estimating nitric acid will have to be decided by a further examination.

No. 1,737.—Method of Clarifying Cider, Ale, Beer, and Similar Liquids.

This correspondent wants to know what substances are used in the most renowned breweries for clarifying the product, and which may also be used for clarifying cider.

In reply we have to say, that a great many substances have been used, or recommended to be used for this purpose, and it is impossible for us to say which of them are employed in any given brewery of this country, since

the latter have been, up to the present time, outside of the control or supervision of the State or Government authorities, except in the matter of internal revenue duties.

But we are enabled to give information regarding the substances permitted by law to be used in Bavaria, the country which is renowned for the best and purest malted liquors. The government supervision over the entire process of brewing is there so strict that infringements of the law have become very scarce, as they are punished by very heavy fines.

The only clarifying agents permitted to be used there are *mechanical ones*, that is, such as will not enter into solution or remain in the liquid under any circumstances. The principal ones are *isinglass* and *fine wood shavings*. Clarifying by means of isinglass is so well known that it need not be described here. The second method, however, is not so well known, and, as it is quite effective, a brief description of it will be of use to many of our readers.

Any kind of moderately close-fibred wood, which is free from strongly tasting resinous matters, may be used for this purpose, but the most suitable has been found to be beach-wood, and hazel-wood. Either of these is cut into lengths of 6 to 12 inches, the bark carefully removed, and the wood reduced, by a machine, to shavings, which ought to be as thin as possible. These must be deprived of tannin by being soaked for several days in cold water, and afterwards repeatedly boiled with water until the latter no longer acquires any color. Only a comparatively small portion of these purified shavings need be used for a cask of the liquid to be clarified—about $\frac{1}{4}$ pound for 15 gallons. The modus operandi by which the clarifying is accomplished is, of course, a purely mechanical one, mostly due to currents established by capillary attraction into the fibres of the wood floating on top of the liquid, and the mechanical adherence of suspended impurities to the surface of the shavings, as a new portion of the turbid liquid is brought towards the surface.

When the casks are emptied the shavings may be taken out, washed, and used over again. The wood shavings are a regular article of trade, and may be obtained through dealers in brewers' supplies.

No. 1,738.—Removal of India-ink Tattooing (Subscriber).

We have given a brief answer to this query, put by another correspondent, in our last issue. We will answer it once more.

If our correspondent will remember what the nature of the black ingredient in India ink is, he will realize the difficulty of the operation better. It is simply *carbon* in an exceedingly fine state of division. There is a popular notion among sailors that the best material for black tattooing is gun-powder, which is said to produce the least irritation when rubbed into the punctured skin. Of course, here it is likewise the carbon or charcoal which is deposited in the finely punctured wounds.

As there is no solvent for carbon, and it is indestructible except by combustion, there is no other method of getting rid of it, when deposited in the skin, than to remove it in substance. This can sometimes be done by causing a superficial suppuration through the application of certain vesicating or caustic substances. But this is an unsafe method in the hands of the inexperienced. It should never be done, except under the advice and treatment of a competent physician. The cautious application of the galvano-cautery may also be found efficacious in certain cases.

No. 1,739.—Muriate of Tin (G. W. H.).

This subscriber asks, "How much crystals of muriate of tin does it take to make solution of muriate of tin for dyeing red with cochineal?"

The mordanting or fixing liquids used for fastening carmine upon fabrics is varied considerably in strength, 1 part of metallic tin being contained in from 5 to 16 parts of the liquid. Probably 1 in 10 is the most common proportion. To prepare such a solution from the commercial crystals of the (pentahydrate of stannic chloride, or) oxyhydrate of tin, $SnCl_4 \cdot 5H_2O$, which contains 117.8 parts of tin in 349.4 parts, three parts of this salt must be dissolved in sufficient water to produce ten parts of solution.

No. 1,740.—Tooth Cement (Dr. L.).

"Dentists use for temporary filling a compound known as 'oxyphosphate of zinc,' and another called 'oxychloride of zinc.' Of these, there are two parcels in small bottles—one a powder and the other a liquid, which, when mixed in certain proportions, form a paste, becoming hard in a longer or shorter time. What are the ingredients, and why do some samples 'set' more rapidly than others?"

The oxychloride of zinc paste is prepared as follows: Mix 1 part of impalpable powder of glass (obtained by elutriation) with 3 parts of finely powdered oxide of zinc, which had previously been deprived of all carbonic acid gas by ignition. Next dissolve 1 part of borax in the smallest possible quantity of hot water, and add it to 50 parts (all by weight) of a solution of chloride of zinc having a sp. gr. of 1.5 to 1.6. Keep the mixed powders and the solutions in separate vials. For use, a portion of the powder is mixed with enough of the solution to make a uniform paste, and the latter at once applied. It will set very rapidly, and it is the function of the borax to retard this a little. By adding a suitable proportion of ochre, the mass may be more or less tinted. When it is set it is as hard as marble, and has, in fact, been recommended as a material for making statuary. It is often called Paris tooth cement.

If any commercial samples do not set as rapidly as others, the fault may lie either with the powder or the solution, the former containing, perhaps, some carbonate, and the latter too much borax or too much water.

The "oxyphosphate of zinc" paste is no doubt a similar preparation, but we do not know the precise method of preparing it. Perhaps some of our readers can furnish it. The "diamond tooth cement" is made by rapidly mixing anhydrous phosphoric acid with lime and filling the tooth with this paste, which soon sets into hard phosphate of calcium.

No. 1,741.—Dentists' Alloy or Amalgam (Dr. L.).

"Why do some of these alloys turn black in the mouth, while others do not?"

The alloys, or, rather, amalgams used by dentists are of varying composition. The best is made by adding mercury to pure gold (in a heated iron capsule or ladle) until the mass is of a doughy consistence at the temperature of hot water. Other alloys (amalgams) are made of silver and mercury; in others, again, the silver is replaced by zinc, tin, cadmium, bismuth, etc. Next to the gold alloy, the best is one containing gold, platinum, and mercury, and next may be placed the copper alloy. All those which contain metals, rendered black by sulphur or its sulphides, are liable to turn dark. The mercury need not be regarded in this reaction, since it gradually disappears from the surface of the "filling." The gold-platinum amalgam will, of course, preserve its color best.

No. 1,742. — Dyeing Wood Black (M. C.).

We are requested to indicate a method by which a clarinet made of cocoa wood, that has once been dyed black, may be dyed over again. In reply, we would say that if the article were one which would stand immersion into a boiling liquid, we might recommend several methods by which this may be accomplished. But we are not sure whether the clarinet would stand it. However, we will quote a process that has been stated to work well.

Boil 4 oz. of logwood and 1 oz. of coarsely powdered nut-galls with $\frac{1}{2}$ gallon of water, strain, and add $1\frac{1}{2}$ oz. of sulphate of copper. Introduce the wood into this solution, and leave it for twenty-four hours. Then take it out, dry it, and immerse it into a solution of acetate of iron (spec. gr. 1.030). By repeated immersion in the two liquids, the color may be deepened.

The black color thus produced may be rendered fast and very intense by applying to it a varnish prepared in the following manner:

Triturate 60 grains of aniline black with a mixture of 1 fluidounce of alcohol and 60 drops of concentrated hydrochloric acid. Dilute the deep-blue solution thus obtained with a solution of about 90 grains of shellac in $4\frac{1}{2}$ fluidounces of alcohol, and apply it to the wood, rubbing it well in.

Note.—Aniline black can properly be produced as a permanent dye only in the fabric itself. The aniline black sold in the trade is insoluble in ordinary solvents, and when dissolved by means of an acid does not exhibit a black color. This will, however, make its appearance after some time, if the surface to which it has been applied is suitably prepared.

No. 1,743. — Curd Soap (G. and C.).

The curd soap mentioned in our May issue as an ingredient in shaving cream is intended to mean any kind of good white soap, made with soda and some animal fat, such as tallow. It does not mean soft soap. We presume that Castile soap (made from soda and vegetable fats) will answer the same purpose, while it is probably nicer and cleaner.

No. 1,744. — Lanolin (G. & C.).

This new base for ointments may be obtained from any wholesale drug-house at between \$1.00 and \$1.20 per pound.

Formulae Wanted.

1. *Liebig Company's Coca Beef Tonic.* — [It is astonishing what abuse is being carried on with some names. Liebig's name is being pirated all over the world in the most unblushing manner. It is well known that the only manufacturing enterprise he ever was personally interested in, was the preparation of extract of Beef in Fray Bentos in South America. While he lived, no serious attempt was made by others to utilize his name for advertising purposes. At present there are dozens of proprietary articles which are ornamented, in some way or other, by the name of this chemist.]

2. *Foster's Bone Liniment.*

3. *Polyform* (Edison's). — We have been told that the following produces a preparation very much resembling it:

Chloral	1 oz.
Camphor	4 oz.
Morphine Sulph.	8 gr.
Chloroform	1 fl. oz.
Ether	4 fl. oz.
Alcohol	6 fl. oz.
Oil of Peppermint	60 η

4. Composition of "Tasteless Castor Oil" (proprietary?).

5. *Pettit's Eye Salve.*

6. *Moxie Extract Nerve Food.*

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THE VEGETABLE MATERIA MEDICA OF WESTERN INDIA. By W. DYMCK, Surgeon Major, Bombay Army, etc. Second edition, revised and enlarged. Bombay and London: 8vo, 1886, pp. vi., 1,012.

THE first and second parts of the new edition of this important work has been noticed by us in our January number, and the publication has been pushed forward so rapidly that the whole work lies now completed before us. It has gained considerably in extent by the introduction of the results of extended new researches by the author, and the careful gleaning from the literature both of Europe and the East, of everything that is calculated to shed light upon the subjects treated of. It is impossible to do justice to the work by brief abstracts, and therefore we refer in advance to future numbers of our journal, as we shall often have occasion to refer to it.

In appendix A, the author gives a list of undetermined drugs; next follows appendix B, treating of oriental weights; C, containing a list of wild plants and seeds used as food during the Deccan famine of 1877-78.

Appendix D contains a report on the chemical composition of the Indian species of Coca, namely *Erythroxylon monogynum* vel *Indicum*, by L. A. Waddell, M.B., Prof. of Chemistry, Calcutta Med. Coll. He states that he has been unable to find any alkaloid, or any other crystalline or amorphous salts in the leaves of this plant.

Appendix E gives an extensive list of Marathi names and drugs, which will be of considerable service to orientals. A detailed index completes the treatise, which is one of the standard and indispensable works of reference.

DR. F. BEILSTEIN'S LESSONS IN QUALITATIVE CHEMICAL ANALYSIS. Arranged on the Basis of the Fifth German Edition. With Copious Additions, including Chapters on Chemical Manipulations, Analysis of Organic Substances, and Lessons in Volumetric Analysis. By CHAS. O. CURTMAN, M.D., Professor of Chemistry in the Missouri Medical College and the St. Louis College of Pharmacy. Second Edition, revised and enlarged, with additional chapter on Analysis of Drinking Water and of Urine. 8vo. St. Louis, 1886 (Druggist Publishing Co.), pp. xii., 200.

PROF. CURTMAN'S adaptation of Beilstein's Qualitative Analysis to the scope and requirements of chemical instruction in medical and pharmaceutical schools has been eminently successful, because it is based on the most natural plan yet devised, namely, to make the student thoroughly acquainted with the properties, behavior, and reactions of the most important typical individual chemical compound or element representing the different groups, before an attempt is made to teach him the method of separating the constituents of a compound or mixture, or recognizing them as individuals, by a systematic course of analysis.

The second half of the work is entirely written by Prof. Curtman. It contains examples for practice in analysis of organic substances, a detailed exposition of volumetric analysis, followed by chapters on the analysis of water and urine.

The work may, in our opinion, also be used with advantage for self-study.

THE INTERNATIONAL ENCYCLOPÆDIA OF SURGERY: A Systematic Treatise on the Theory and Practice of Surgery by Authors of Various Nations. Edited by JOHN ASHHURST, Jr., M.D., Professor of Clinical Surgery in the

University of Pennsylvania. Illustrated with chromo-lithographs and woodcuts. In six volumes. Vol. VI. New York: Wm. Wood & Co., 1886, pp. 1,272.

THE concluding volume of this great work comprises the following subjects: Injuries and Diseases of the Oesophagus, by J. Solis Cohen; Intestinal Obstruction, by J. Ashhurst, Jr.; Injuries and Diseases of the Rectum, by Wm. Allingham; Urinary Calculus, by E. L. Keyes; Lithotripsy, by W. H. Hingston; Injuries and Diseases of the Bladder and Prostate, by R. Harrison; Injuries and Diseases of the Urethra, by S. Duplay; Injuries and Diseases of the Male Genital Organs, by H. R. Bell; Injuries and Diseases of the Female Genitals, by T. Parvin; The Cæsarean Section and its Substitutes; Laparotomy for Ruptured Uterus and for Extrauterine Fœtation, by R. P. Harris; Ovarian and Uterine Tumors, by C. C. Lee; Inflammatory Affections of the Bones, by L. Ollier; Scrofulo-Tuberculosis and other Structural Diseases of Bones, by E. Vincent; Tumors of the Bones, by A. Poncet; Orthopædic Surgery and the Treatment of Deformities, by F. R. Fisher; Construction and Organization of Hospitals, by E. Cowles; Preparation of Military Surgeons for Field Duties; Apparatus Required; Ambulances; Duties in the Field, by B. A. Clements, and a History of Surgery, by G. Y. Fisher.

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Whole No. 146.

[ORIGINAL COMMUNICATION.]

AN IMPROVED DRYING OVEN.

BY CHARLES RICE.

FOR the past four years I have constantly made use of the drying-oven here illustrated. I had previously used various forms of steam-closets or drying boxes, but none appeared to be entirely free from certain disadvantages, considering the work expected of them. In designing the form here described, my object was to enable me to use either steam or some hot liquid as a source of heat, and to arrange it so that it would perform its work uniformly and automatically, without having to be watched. As I desired to have it available for steam, it had, of course, to be constructed of rather stout material to resist the pressure.

The apparatus has the usual shape of the laboratory drying-oven. It is constructed of stout sheet copper, has double walls on all sides (even the door has double walls, but the space between them is here filled with asbestos), and the parallel sheets forming each side are held together by carefully placed rivets, which serve at the same time to prevent the sides from bulging when steam is used.

The space between the walls has two inlets and one outlet. The outlet is at *B*. At *F* there is an opening which may be closed with a plug. And at *A* a steam-pipe enters the apparatus.

The two tubulures *G* and *H* communicate with the interior of the drying-oven. One of these is intended to hold the thermometer, while the other serves as a chimney for the escape of the volatilized vapors arising from the substances which are being dried.

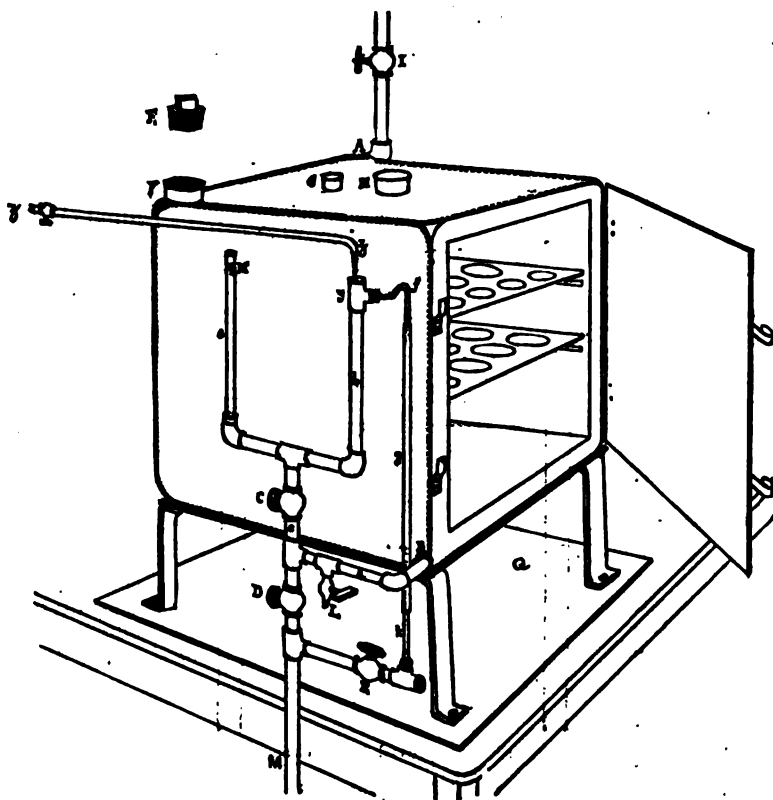
While speaking of the thermometer, it might be remarked here that its indications may be rendered much closer to the true temperature existing within the box, if the escaping vapors are made to pass the whole of the stem of the thermometer so that it will be constantly surrounded by a current of the hot vapor arising from the oven. This may be accomplished by inclosing the thermometer (*a*, Fig. 2) in a rather wide glass-tube (*c*), open at both ends, a couple of notched corks (*b, b*) serving to keep the thermometer in position. The wide glass-tube is fitted air-tight into a cork (*d*) in the larger tubulure, while the other tubulure is closed with a cork. If the upper orifice of the wide glass-tube is connected with the filter-pump, and the latter be made gently to aspirate the hot air or hot vapor arising from the drying-oven, the substances within the latter will be dried much more rapidly. In order to be able to see the rate at which the aspiration of the vapors takes place, it is best to draw them first through a bottle containing water or some other liquid where the rate at which the

bubbles are passing renders the current of vapor or air visible to the eye. The current should not pass too rapidly, since the fresh air entering the drying-oven at the edges of the door would not have time to acquire the full temperature of the oven. Provision might have been made to cause all fresh air thus entering the apparatus to be previously dried and heated, but this would unnecessarily have complicated the apparatus. In my experience, it was found not to be necessary.

The outside of the drying-oven, except at the bottom and over the door, is covered with a thick layer of asbestos felting, snugly and carefully applied. This serves to reduce the loss of heat by radiation to a minimum.

The inside dimensions of the oven are:

FIG. 1.



Rice's improved drying oven.

Width.....18 inches
Length.....13 "
Height.....16 "

and the walls are one inch apart, except at the bottom, where they are one and one-half inches apart.

The outlet at *B* has several connections, as will be seen from the cut. If the valve *D* is closed and *C* is opened, and water is allowed to run into the open T-piece *y*, it will descend and enter the apparatus through *b, c*, and *d*. At the same time, the level of the liquid inside of the walls will be indicated by the glass gauge *e*. Should the volume of water within the walls be such that it would rise to the level of the bent glass-tube *f*, this would act as a siphon and draw out of the T-piece any excess of water, thus preserving the level exactly at *N*. The surplus water runs down the tube *g* and *k*, and, the valve *E* being open, finds its way into the waste-pipe *M*.

The supply of water for the T-piece *y* is brought by any suitable conduit, such as *z*.

The plug belonging into the orifice *F* is never inserted except when steam is used for heating the apparatus.

Under ordinary circumstances it is

not possible to attain, or, at least, to maintain a temperature of 100° C. (212° F.) by means of plain water raised to boiling by a gas flame placed below the apparatus. To permit a large range of temperature, from a gentle heat to considerably beyond the boiling point of water, it is advisable to charge the apparatus once for all either with a saline solution of proper density or some other high boiling liquid. I have used a mixture of equal volumes of glycerin and water for several years, and this has given me every satisfaction. The water which gradually boils away is replaced by fresh water constantly supplied through *z*. In its descent through the pipes *b, c, d*, it becomes gradually heated, and by the time it finds its way into the chamber at *B* it has acquired the temperature of the interior, so that it cannot chill off the liquid already there.

The glycerin would very gradually become volatilized with the steam of the water escaping from the orifice *F*. But this may be prevented by inserting into the latter either an upright condenser or simply a long glass-tube held by a cork. The steam, during its passage through this tube, will become sufficiently condensed to cause any glycerin carried along with it to find its way back into the apparatus. A glass tube, intended to serve as a condenser, will be found to work so much the better the less direct a way it offers to the vapors to escape—without, however, offering any resistance. A few zig-zag bends made in the tube will answer every purpose.

The tubes *f* and *k* are of glass, to permit the rate of overflow being seen.

The drying-oven stands on a solid iron frame on legs, and a piece of stout asbestos felting, *Q*, is interposed between it and the table, to prevent the latter from being scorched by the long-continued heat.

When the apparatus is once started, and the proper temperature has been reached by adjusting the flame which heats it, it may be kept going for weeks without requiring any further adjustment. If the gas supply comes directly from the meter, there may be a necessity of regulating the gas flame both at night, when a greater pressure is put on at the gas-house, and in the morning, when it is reduced. But even this may be avoided by applying a gas-regulator to the meter in the house or laboratory.

If it is desired to empty the apparatus, the supply of water at *z* is shut off, a rubber tube attached to the stop-cock *L*, and the latter opened, when the contents may be received in a vessel placed below.

The use of a naked flame below an apparatus of this kind is sometimes risky, particularly when ether, benzine, or other inflammable liquids are to be evaporated off. In such cases it is very convenient to be able to use

steam, and it is just for such occasions that I intended to use it. When steam is wanted, the apparatus is first emptied in the manner stated above. Next the valves *E* and *C* and the stop-cock *L* are closed. The plug *F* is tightly screwed in, and steam cautiously turned on at *I*. By carefully regulating the inlet and the outlet (at *D*), the proper pressure and temperature may be obtained. If it is known that the pressure obtainable from the boiler cannot exceed that which the apparatus is capable of standing, a steam-gauge or safety-valve may be dispensed with. But it is always safest to use these, and it is absolutely necessary to do so when the boiler can make steam of higher pressure than the apparatus can bear. The steam-gauge and safety-valve, suitably combined by fittings, are screwed into the orifice *F* in place of the plug.

The inside of the oven is provided in the usual manner with several movable shelves made of sheet copper, and perforated with suitable holes for receiving funnels, etc.

If it is not intended to use steam in such an apparatus—in which case sheet copper of about $\frac{1}{4}$ inch in thickness will answer—the expense of constructing it will not be great. The advantages of the apparatus, however, outweigh the expense by far. I have had it sometimes going for eight and ten weeks without interruption.

Those who wish to combine with it a contrivance for maintaining a constant temperature, such as has been illustrated and described in former issues of this journal, may, of course, add this feature to it. For all ordinary work the apparatus answers perfectly well without this, if moderate care be taken to adjust the gas once for all properly, and to prevent cold draughts from passing over the apparatus.

[ORIGINAL COMMUNICATION.]

PEPSIN AND ITS VALUATION.

BY FRANK S. HERETH, OF INDIANAPOLIS.

THE U. S. P. recognizes saccharated pepsin only, and not any of the forms of so-called concentrated pepsin, and defines it as "the digestive principle of the gastric juice obtained from the stomach of the hog, mixed with powdered sugar of milk."

Following this are the tests of identity and of digestive strength.

The assay process is defective, however, in failing to designate the degree of fineness to which the coagulated albumen should be reduced before submitting it to the action of the pepsin. This is important, since different results might be obtained from the same pepsin, using albumen of different degrees of reduction.

It is required to dissolve at least fifty times its own weight of albumen.

The requirements of the British and German pharmacopoeias are very low, considering that, from their titles and wording, they are not saccharated pepsins, but the ferment itself in its purest obtainable state.

The B. P. alone of the three pharmacopoeias gives a method of preparation, that of scraping the previously cleaned mucous membrane with a blunt knife or other suitable instrument, and drying the pulp thus obtained on glass plates, at a temperature not exceeding 100° F. The requirement of its digestive strength is very low indeed, considering that it contains no added substances—one grain being required to digest but fifty of coagulated albumen, while the U. S. P. article will dissolve the same amount, though it may contain many times the weight of the contained pepsin in sugar of milk.

It seems a little remarkable that so late a revision as this should adopt this old and, in this country, long superseded process. Probably no pepsin is made in this country by this process, all true ones being made by Scheffer's process of precipitation.

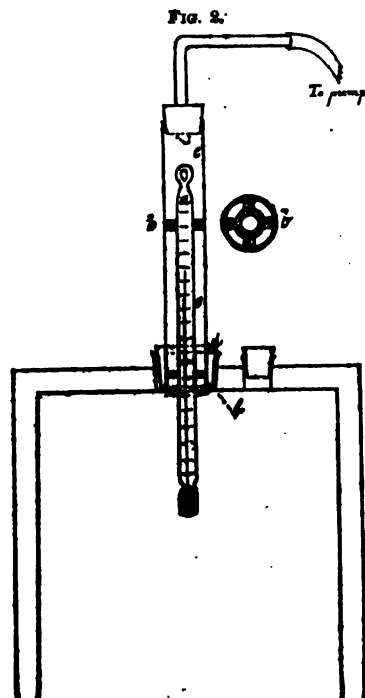
The German pharmacopoeia, like the British, names the article simply pepsin, and recognizes no admixture with sugar of milk.

It is, however, required to possess a greater digestive strength, one part digesting 100 parts of albumen. It, also, prescribes the degree of fineness to which the albumen should be reduced, as does also the B. P.

It has always been a matter of some difficulty to test pepsin with a satisfactory degree of accuracy.

First. If the albumen is submitted to the action of the pepsin in the state of large pieces, it may be easy to separate and weigh the undissolved portions, but in the coarse condition it cannot be favorably acted upon by the pepsin, since so little surface is exposed, besides which drawback, there is that of the pieces becoming peptonized on the surface and preventing the action of the pepsin upon the interior.

Secondly. When the albumen is



Rice's improved drying oven.

very finely divided, so as to allow the most favorable condition for the action of the pepsin, it is impossible at the end of the process to accurately separate the undissolved portions in condition for weighing.

To those familiar with the process as generally carried out, no further elucidation is necessary.

It was these difficulties that led to the adoption of the following process, which I have successfully used during the past year with uniformly satisfactory results, so as to be left in no doubt as to the power of the pepsin employed, and by means of which the troublesome weighing is dispensed with.

For the assay of saccharated pepsin, five two-ounce wide-mouthed vials are provided, and into each of them is weighed just one grain of the pepsin to be assayed. A quantity of water and hydrochloric acid, in the proportion recommended by the pharmacopoeia, having been provided, 507½ grains are weighed into each bottle, or a measure, graduated so as to hold 507½ grain-measures, used for measuring it into them.

The albumen from an egg, which has been boiled fifteen minutes and then cooled, is carefully separated from the yolk, and by means of a small spatula forced through a piece of

brass gauze of 80 meshes to the linear inch.

The albumen is then quickly weighed in portions, placing 20 grains in one vial containing the pepsin solution, 30 in another, 40 in another, 50 in another, and 60 in the last. The vials are then corked, and the number of grains of contained albumen marked on the cork of each bottle, when they are placed in a water-bath and kept at 100° to 104° F. for four to six hours. They should be placed in a part of the bath remote from the source of heat if a direct flame is used, as the bottom of the vials, being in contact with the metal where the flame strikes it, would be much warmer than the water contained in the bath. It is preferable, where a steam water-bath cannot be used, to place the vials in a second vessel, immersed in the bath proper.

It is necessary to shake the vials frequently, and to also remove the corks occasionally.

When the proper time has expired, the vials are removed, allowed to deposit all undissolved albumen, and the eye can readily read the result.

In some cases it may be found that all the albumen in each vial is entirely dissolved, and in others that they all contain undissolved portions in varying amounts, the one in which was placed the least containing but perhaps a trace, and from this to the greatest containing progressively greater amounts undissolved. Of course, this depends upon the activity of the pepsin.

In case of desire to assay an undiluted or "concentrated" pepsin, $\frac{1}{8}$ gr. is weighed into each bottle, or 10 grs. are carefully and well triturated with 90 grs. of sugar of milk and 1 gr. used, proceeding then as above. In case of small amounts of albumen remaining in the bottle containing the least amount, the eye soon learns to judge of the amount far more accurately than could be determined by weighing.

It may be interesting in this connection to give a few of the results obtained by this process with some of the pepsins of the market.

A so-called "Turkey pepsin" leads the list. That is, it was found to be absolutely inert. Several samples of commercial pure pepsin were found, one grain of which would dissolve 500 to 700 grains of albumen, and one sample, manufactured by the Royal Chemical Co., New York, was found to digest 1,150 grains. This is the highest result I have ever obtained from numerous careful tests.

One of the "scale pepsins" of the market was found to dissolve 157 grains of albumen, while another sample from the same firm dissolved 350. In fact, there are just as many degrees of strength of "concentrated" pepsin as there are lots made, since the same conditions cannot always be met with in different membranes used.

In assaying liquid pepsins, the process is very easily carried out. One fluid ounce may be measured into each of six or eight vials, and different amounts of albumen placed in each, and the strength easily arrived at with very little trouble. I should be much pleased to have others try this process and report upon results. Since making the above observations, I have been led to try the method recommended by the British Pharmacopoeia, of digesting at 130° F. for half an hour, instead of 100° to 104° for four to six hours. It seems to be a most remarkable way of testing, as the temperature is so far above that reached in the stomach. My results in each of two trials, carrying the period of digestion to 45 minutes instead of 30, are that as high results are not obtained by fully 10 per cent, and my experience has not encouraged me to recommend it.

As regards all pepsins, I am inclined to think the manufactures of the

United States far ahead of those of Europe as regards digestive strength.

These tests were all made in the laboratory of Eli Lilly & Co., Indianapolis.

NOTE ON STROPHANTHUS.

MUCH inquiry is at present made by members of the medical profession after a new cardiac drug, which is reported to possess the useful properties of digitalis without its disadvantages. This drug is the seed of a plant belonging to the natural order Apocynaceae, viz., a species of *Strophanthus*.

The genus *Strophanthus* is distributed over a large area of tropical Asia and Africa, there being about eighteen different species known, one of them occurring also in extra-tropical southern Africa.

The general characters of the genus are as follows (according to Hooker):

Small trees or shrubs, often climbing. Leaves opposite. Flowers usually large, in terminal cymes. Calyx 5-partite, glandular within. Corolla funnel-shaped, tube short, throat large, campanulate, with 10 free or connate scales; lobes overlapping to the right, produced into long or short tails, rarely ovate acute. Stamens, at the top of the tube, included, filaments short; anthers sagittate, tips filiform, conniving around and adhering to the stigma, cells spurred at the base.

Follicles oblong or elongate, hard, spreading.

Seeds compressed, fusiform, narrowed into a feathery tail, or with a sessile coma, base with a deciduous tuft of hairs.

The particular species which yields the seeds that form the drug in question is supposed to be *Strophanthus hispidus* Bn., though it is possible that some other species, such as *Strophanthus Kombé* Ol., may furnish similar seeds.

These plants have been known for a number of years as the source of an arrow-poison, called by different names in different parts of Africa, viz., *Iné*, *Onayé*, *Inayé*, *Kombi* or *Kombé*, and *Kongkonie*.* (Some authors have *Onagé* instead of *Onayé*.) This arrow-poison seems to have been in vogue all over the tropical part of the African continent, though, perhaps, more generally in the western portion. It was used as an efficient aid in killing large and dangerous game.

In 1865, Pelikan first proved that this poison contained a powerful cardiac principle, upon which its fatal effects depended. His statements were confirmed by the investigations and reports of Dr. Fraser (in the "Proc. of the Royal Soc. of Edinburgh," 1869, and in the *Journ. of Anat. and Phys.*, 1872), Polakion and Caville (in *Arch. de Physiol.*, 1872), and Valentine (in 1873).

Dr. Fraser, of Edinburgh, was the first to isolate from the arrow-poison a crystalline principle, named afterwards *strophanthin*, which belongs to

the class of glucosides. Hardy* and Gallois, in 1877, erroneously supposed this to have been declared an alkaloid by Dr. Fraser.

The difficulty of obtaining a sufficient supply of the drug, and other circumstances, for some time interrupted Dr. Fraser's experiments. He succeeded, however, at length in procuring the original drug itself, namely, the follicle of *Strophanthus*, containing the seeds. In a paper read by him at last year's meeting of the British Medical Association, he says:

"The difficulty of procuring a sufficient supply of *strophanthus*—now overcome through the kindness of Mr. Buchanan—and other unavoidable circumstances interrupted for some years the investigation that had so far proceeded, and interrupted especially the application, which had early suggested itself to me, of this substance to the treatment of disease. The latter application has since been made, and, in the course of this communica-

tion, that give an arrow-like appearance to the seeds.

"The seeds are very active, and, when coarsely ground and formed into a paste, they constitute the poison with which arrows are smeared. Poisoned arrows are used for procuring food, or for purposes of attack or self-defence by many tribes in Africa. They have been met with at Kombé, in the Manganya country, near the Zambesi, in the Shiré Valley in the Gaboon district, in Guinea, and in Senegambia. The poison is in some places called 'Kombé,' and in others 'Inée' or 'Onagé.'

"When examining the chemical properties of the seeds, I early separated a crystalline body, having a strongly bitter taste, of a feebly acid reaction, readily soluble in water and in rectified spirit, and practically insoluble in ether, benzol, and petroleum spirit. [A crystalline specimen was exhibited.] This substance, which I have termed *strophanthin*, is not

precipitated by the ordinary reagents for alkaloids; it does not contain nitrogen; and when it is heated with dilute sulphuric acid it yields glucose and a body insoluble in water, but very soluble in rectified spirit, and having a strongly bitter taste which may be termed *strophanthidin*. The crystalline body, *strophanthin*, is largely present in the seeds; its action is the same as that of the seeds themselves, and it can be separated in a comparatively pure form by a simple process. The essential part of the process consists of removing from a watery solution of the alcoholic extract a large quantity of fat and coloring matter, by agitating repeatedly with ether, and then evaporating the watery solution at a low temperature. Some further manipulations are required to separate a small quantity of impurity; but, even when they are not adopted, a crystalline and only slightly colored *strophanthin* may be obtained, which represents from 8 to 10 per cent of the seeds used.

"I have also found that *strophanthin* is present in the leaves and bark of the plant, but in smaller quantity than in the seeds.

"The pharmacological action of *strophanthus* appears to be an extremely simple one. It may, I believe, be described in a few words, that it is a muscle poison. However introduced into the body, it increases the contractile power of all striped muscles, and renders their contraction more complete and prolonged. In lethal doses it destroys, besides, the capacity of the muscle to assume the normal state of partial flaccidity, and causes the rigidity of contraction to become permanent, and to pass into the rigor of death. As the result of the action on muscle, the heart is early and powerfully affected. It receives a larger quantity in a given time than any of the other muscles of the body, and therefore it probably is that *strophanthus* affects its action more distinctly and powerfully than the action of the other striped muscles. Indeed, by regulating the dose, a very distinct pharmacological influence may be pro-



Follicles and seeds of *Strophanthus hispidus*.

tion, I shall bring before the Section a few of the therapeutic results I have obtained.

"Before doing so, it may be interesting to the members of the Section were I to state some facts regarding the use of *strophanthus* as an arrow-poison, and regarding its chemistry and pharmacology.

"The plant belongs to the natural order of *Apocynaceae*, and it is widely distributed throughout equatorial Africa. Oliver, De Candolle, and Baillon have described its botanical characters. It produces a follicle from nine to twelve inches in length, within which are contained from one to two hundred oval seeds, characterized by having beautiful comose appendices,

* E. Hardy, "Rapport sur l'Inée (*Strophanthus hispidus*)," in *Bull. mens. de la Soc. d'Acclimatation*. Avril, 1877.—Hardy appears to have had a follicle under his observation, as he describes it quite correctly as being cylindrical, becoming thinner at both ends, with a thin and fragile wall. Compare also Gerrard in *Pharm. Journ.* [3], xl. (1861), 585.

* Rochebrune et Arnaud, "Recherches chim. et tox.-physiol. sur le Onabalo," in: G. Revod, "Faune et Flore des pays Comalis." Paris, 1882. (The onabalo is an arrow-poison derived from a terebinthaceous plant.)

duced upon the heart, while the other muscles remain apparently quite unaffected."

Through the kindness of Mr. H. N. Fraser, of 208 Fifth avenue, New York, we have had the opportunity of examining specimens of the drug. They consisted of a closed and an open follicle, the latter containing the winged seeds. They being the only specimens at that time in the country, we had to content ourselves with a superficial examination, but we caused a photograph to be taken of them, which accompanies this note.

The closed strophanthus follicle was 13 inches long. (According to Dr. Fraser, the ripe follicles vary between 9 and 12 inches.) It is not round, but somewhat flattened along its whole extent. Viewed from in front, the broadest portion is about 1 inch from the base, where it measures $\frac{1}{4}$ inch across. Viewed from the side, the broadest part is situated higher up, about $1\frac{1}{2}$ inches from the base, and here the diameter is $\frac{1}{4}$ inch. From either point the follicle tapers gradually towards both ends, ending in a fine point at the top. The follicle is slightly curved, the ventral suture being, as usual, on the convex side. The shell of the follicle is thin and fragile. Externally it is dull yellowish-brown, and finely-grooved lengthwise. The interior surface is shining, bright pale-yellow, or yellowish-brown.

The seeds contained within the follicle are comose—as shown in cut—the stalk of the tuft being about 2 inches long, while the hairs themselves have a length of $\frac{1}{4}$ to 2 inches.

The seeds are irregularly oval and flattened, of a glossy, brownish color, and of a velvety appearance, due to fine, appressed hairs. They are about 10 millimeters ($\frac{1}{2}$ inch) long, 4 Mm. broad across the centre, and, at the thickest portion, about 2 Mm. thick, tapering to 1 Mm. at either end. The base or radicle end of the seed is blunt; at the other end it tapers to a fine, slightly-curved point, from which the stalk of the coma arises. The surface of the seed is irregular, an elevated central ridge running from one end to the other.

The supplies of strophanthus at present available are scarce, as there is no regular export carried on as yet. Dr. Fraser, of Edinburgh, has succeeded in obtaining what are believed tolerably regular supplies. But only one other house, Messrs. Burroughs, Wellcome & Co., of London, has so far succeeded in securing an invoice of the drug. At present, it cannot be supplied in the crude state, but is sold in form of tincture, the dose of which is stated to be from 2 to 6 drops.

Lactate of Morphine.

A NOTE on this salt of morphine has recently been published by Mr. D. B. Dott.

When crystallized, it has the composition:



and is, therefore, anhydrous, being, in fact, the only salt of morphine so far known that will crystallize from water in an anhydrous condition.

Lactate of morphine is soluble in 8 parts of water, and in 93 parts of alcohol (sp. gr. 0.838 at 60° F.—*Pharm. Journ.*, May 15th.

Amyl Nitrite an Antidote to Cocaine.

DR. SHILLING reports in the *Medical Chronicle* that a female patient, to whom a solution of cocaine had been administered hypodermically, became suddenly unconscious. Suspecting that this was due to a contraction of the blood-vessels in the brain, he caused her to inhale the vapor of 3 drops of amyl nitrite, which restored her in a very short time.

[ORIGINAL COMMUNICATION.]

PHENYLHYDRAZIN AS A REAGENT FOR GLUCOSE.

WE have already in a previous issue mentioned the fact that a new reagent for glucose in the urine has recently been proposed; but we have awaited further information before giving details. These we can now supply to some extent, although we have not yet, ourselves, had more than a casual chance to experiment with the reagent.

In the first place it should be stated that all sugars having the composition $C_6H_{12}O_6$, and to a certain extent also those composed of $C_{12}H_{22}O_{11}$, may be regarded as closely allied either to the aldehydes or the ketones. Now there are certain reactions to which all aldehydes or ketones respond, both those which are regularly recognized as such, and also certain other bodies, the true relationship of which to aldehydes and ketones is not yet clearly understood, but is rendered more than probable by their behavior to these reagents, and other striking properties.

V. Meyer has found that *hydroxylamine* is a universal reagent for aldehydes and ketones, and Emil Fischer now recommends *phenylhydrazin* for the same purpose.

Phenylhydrazin may be regarded as ammonia NH_3 , in which 1 at. of hydrogen is replaced by phenyl C_6H_5 , and the other one by amidogen NH_2 . It may be obtained by various processes, of which the following yields the best result:

Twenty parts of aniline ("oil") are dissolved in 50 parts of hydrochloric acid of spec. gr. 1.19 and 80 parts of water. This solution is mixed, while cold, with a calculated quantity (molecule for molecule) of sodium nitrite dissolved in twice its weight of water and acidulated with hydrochloric acid, whereby diazobenzolchloride is produced. This solution is at once poured into an ice-cold, saturated solution of sodium sulphite (2 mol. of Na_2SO_3 for every 1 mol. of aniline) and, as soon as a sample of the separated crystals, when warmed with some of the supernatant liquid, dissolves therein to a clear liquid without evolution of gas, the whole mixture is cautiously heated on the water-bath so that the separated salt is nearly all dissolved, and the solution carefully neutralized with hydrochloric acid. Finally, it is acidulated with acetic acid and the warm solution treated with zinc powder until it is decolorized. The solution is now filtered, heated to boiling (mixed with one-third its volume of fuming hydrochloric acid or as much as is necessary to combine with the phenylhydrazin), which causes the separation of hydrochlorate of phenylhydrazin. This is decomposed by soda, causing most of the phenylhydrazin to be precipitated as an oil, while the remainder is recovered by shaking the remaining solution with ether. The crude substance is dehydrated with potassium carbonate and rectified.

It forms an oil of a feebly aromatic odor, congealing when cooled to crystalline plates. It melts at 23° C. (73.4° F.), and boils at 233-234° C. (451-453° F.), at 750 mm. It is a base, capable of combining with acids. It resists reducing agents very energetically, but is very easily destroyed by oxidizing agents. Fehling's solution is reduced even by highly dilute solutions of phenylhydrazin, nitrogen being given off, Cu_2O being precipitated, and aniline and benzol being formed.

When phenylhydrazin is brought in contact with aldehydes or ketones, they combine in even molecules to solid or oily condensation products, water being eliminated. In order that this reaction may be unfailing, it is

necessary to have the reagent as pure as possible. It is best, therefore, to purify the commercial substance by separating the base from any acid present, heating it to drive out any free ammonia, dissolving it in 10 parts of alcohol, and then saturating it with concentrated hydrochloric acid. The crystalline mass is separated, washed with alcohol and ether until completely colorless and then dried on the water-bath.

The reaction with phenylhydrazin takes place best in a solution slightly acidulated with acetic acid. It is therefore preferable always to employ a freshly prepared solution containing

Hydrochlorate of Phenylhydrazin..... 1 part.
Acetate Sodium, cryst. $\frac{1}{4}$ parts.
Water..... 8 to 10 "

In the case of most ketones and aldehydes, the reaction may be performed in aqueous solution. In the case of insoluble, aromatic bodies, alcohol may be added. In most cases, the separation of the product of the reaction takes place already in the cold, in others (as in the case of glucose) heat is necessary.

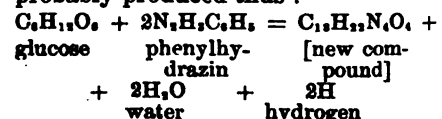
The presence of free mineral acids prevents or retards the reaction. If they are present, they must be neutralized with soda. Nitrous acid is altogether inadmissible, and if present, must first be removed by means of urea.

The practical application of this reagent may be shown on the following examples.

1. *Oil of Bitter Almonds.* True oil of bitter almonds is an aldehyde, viz., benzaldehyde. See our May number, page 93. A solution of 1 part of this oil in 2,000 parts of water, when treated with the hydrochlorate of phenylhydrazin, yields at once a strong, white turbidity, which, on shaking, becomes a thick, flocculent, white precipitate. The reaction is still visible in a dilution of 1 to 50,000. The precipitate may easily be recrystallized from warm alcohol. The crystals melt at 152.5° C. (306° F.). [This test will distinguish the true oil of bitter almonds from nitrobenzol and other substitutes, and at the same time will serve as a means of separating them.]

2. *Acetophenone*, now commonly known as *hyponone* (see our April number, page 77). This, when suspended in water, and shaken with a solution of phenylhydrazin, quickly yields a yellowish, crystalline compound, which may be recrystallized from alcohol.

3. *Dextrose (Glucose).*—If 1 part of dextrose is heated with 2 parts of hydrochlorate of phenylhydrazin, 3 parts of sodium acetate, and 20 parts of water, on a water-bath, fine yellow needles will begin to separate after 10-15 minutes. These crystals are almost insoluble in water, but easily soluble in boiling alcohol. They have the composition $C_{12}H_{22}N_2O_4$, and are probably produced thus:



Yet Emil Fischer (who discovered this reaction, and from whose report, in *Ber. Deutsch Chem. Ges. and Zeit. f. anal. Chem.*, we take most of the present account) never could observe any escape of hydrogen, and therefore believes that there are some secondary reactions going on. He proposes for the new compound the name

PHENYL-GLUCOSAZONE,

until its nature can be studied and better understood.

As to the use of the reagent: for detecting glucose in urine.

This has been demonstrated by the experiments of Jaksch and Grocco

(*Zeitsch. f. anal. Chem.*, 1885, 478). When 50 C.c. of urine containing glucose are mixed with a solution of 2 Gm. of pure hydrochlorate of phenylhydrazin and 1.5 Gm. of sodium acetate in 20 C.c. of water, and the mixture heated on a water-bath, the above-mentioned new compound, *phenylglucosazone*, will be separated after 10 to 15 minutes, in form of a yellow precipitate, appearing under the microscope as yellow needles, often grouped in stars. If the precipitate is amorphous, it may be easily crystallized from alcohol. According to Grocco, the above test succeeds yet in presence of only 0.01 Gm. of glucose in the liter (about $\frac{1}{4}$ grain per quart), and has this advantage over other reagents for glucose, that no other substance occurring in the urine produces any reaction with it.

4. Other sugars likewise respond to the reagent. For details regarding these we must refer the original (*Ber. d. Deutsch. Chem. Ges.*, 19, 579).

CENTRIFUGAL APPARATUS FOR LABORATORIES.

THE centrifuge here illustrated has been put on the market by C. Gerhardt, of Bonn, and is constructed after the pattern of the large centrifuges used in sugar factories. It weighs about 30 pounds, and occupies but little space, being 11 $\frac{1}{2}$ inches in diameter, and nearly 24 inches in height. Every portion which is liable to come into contact with the liquid to be separated is enamelled. Hence it is immaterial whether the liquid has an alkaline or an acid reaction.

The manner of operating the apparatus is intelligible from the cut.

An apparatus of this kind will be found of great service in many operations in the pharmaceutical and chemical laboratory.

Among many other uses to which it may be put, the following may be mentioned:

1. Drying of crystals, the moisture contained between them being ejected by the centrifugal motion.
2. Separating the liquid portion from moistened drugs, such as occur when making infusions, macerated tinctures, or separating the liquid portion from residues of percolation.
3. Filtration of syrups and other liquids, a suitable filtering cloth being laid upon the inside of the revolving drum.

Method of Obtaining Clear Filtrates with the Filter Pump.

It is well known that certain substances, suspended in liquids, have the disagreeable tendency of passing through the pores of the filter until the latter has been somewhat clogged by them, or the substance has become slightly granular and cohesive. Instances of this kind are precipitated barium sulphate, carbonate of lead, certain sulphides, etc., etc.

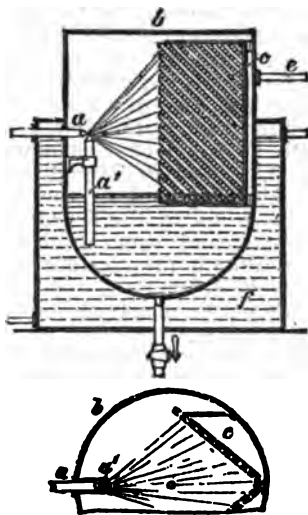
When a filter pump is used, the rate of exhaustion gradually increases in a constant ratio to the highest point attainable with the rate at which the water passes through the pump. And as long as there is *any* increase of exhaustion a clear liquid cannot be expected in these cases.

Dr. G. H. Bailey, of Manchester, has devised a plan to overcome this difficulty. In addition to the usual two perforations in the rubber cork, one of which is to hold the funnel, while the other leads to the pump, he provides a third, through which a tube passes, over the external end of which a piece of rubber tubing is slipped, and the latter closed with a stop-cock in such a manner that, when the rarefaction in the receiver reaches 200 millimeters, air can pass into the receiver, and can sustain the partial vacuum at 200 Mm.

The apparatus having been thus arranged, and the pump set going, the filtration may begin. Until the exhaustion has reached 200 Mm., the filtrate will run through cloudy. After it has been maintained a short time at 200 Mm., it will begin to run clear, and the muddy filtrate may then be removed and poured back again, so as to get the whole filtrate bright and free from suspended matter.

The stop-cock may be arranged so that air may be admitted at any other degree of rarefaction.—After *Annal. d. Chem.*, 232, 358.

Note.—The idea of thus arresting the exhaustion at a fixed point is very good, but the means adopted for obtaining it do not seem to us to be quite satisfactory, since it is certainly not an easy matter to adjust a pinch-cock so that it will slightly open when the



Apparatus for distilling by spray.

outside pressure bears a certain relation to the inside pressure in the apparatus. There are many ways that suggest themselves as improvements. One of these, which we have tried, is quite simple. Make a series of fine pin-holes in the rubber tube attached to the glass-tube, and place the pinch-cock so that it will leave as many of the pin-holes to act as valves as may be found necessary to keep the exhaustion at the desired point.—Ed. AM. DR.



Gerhardt's centrifuge.

Accident at Aniline Works.

THE substitution of hydrochloric for acetic acid in the manufacture of aniline has very nearly caused the death of five operatives in the works of Messrs. Durand & Huguenin, in Basle. It appears that this firm was in the habit of using in their works German hydrochloric acid, prepared with sulphuric acid from copper-pyrites, which always contains a large percentage of arsenic. During the process of aniline manufacture, the arsenic chloride contained in the hydrochloric acid became transformed into arseniuretted hydrogen, which the operatives inhaled.—*Chem. and Drugg.*

DISTILLATION OR EVAPORATION OF SPRAY.

ARMAND MUELLER, of New York, is the patentee of an apparatus for evaporating or distilling liquids by means of a spray or jet of air or steam.

Within the still or boiler is placed a perforated frame-work, made of wood or metal according as the nature of the liquid will admit. The shape of this frame in horizontal sections is shown in the smaller figure. The spray apparatus, *a a*, carries a current of compressed air, which may also be previously heated, if required. The products of the distillation are aspirated away through *e*. The boiler or chamber *b* may be heated by a water, sand, or oil bath.

The object of the frame is to deprive the spray as much as possible of particles of liquid mechanically carried over.

[ORIGINAL COMMUNICATION.]

A COMPARATIVE SURVEY OF THE PHARMACOPŒIAS OF EUROPE AND THE UNITED STATES.

DR. BRUNO HIRSCH, of Frankfurt-on-the-Main, has just favored us with the concluding number of the first volume of his latest work, already mentioned in previous issues of this Journal.*

The preface of this volume contains a summary of the results of the comparison of the leading pharmacopœias of the world. This summary, from the pen of so competent a critic on the field of pharmacopœial literature, has been written at a time when the salient features of each pharmacopœia must have been most vividly impressed on the mind of the writer, and it contains much from which the future revisers of the different pharmacopœias may derive benefit. We have thought it incumbent upon us to translate such portions as may be of more general interest.

The pharmacopœias which the author has made use of and collated in his work are the following:

[*Note.*—The language (or languages) in which each of these is composed is appended to each in parentheses.]

- Austrian, VI.; 1869, Suppl., 1879. (Latin.)
- Belgian, II. (III.); 1885. (Latin and French.)
- British, II.; 1885. (English.)
- Danish, II.; 1868, with Supplements, 1874 and 1876. (Latin; Suppl., Danish.)
- Finnish, IV.; 1885. (Latin.)
- French, IV.; 1884, with "Erratum." (French.)
- German, II.; 1882. (Latin and German.)
- Greek, I.; 1837, and Suppl., 1868. (Latin and Modern Greek.)
- Hungarian, I.; 1871. (Latin and Hungarian.)
- Netherlands, II.; 1871. (Latin.)
- Norwegian, II.; 1870, Suppl., 1879. (Latin.)
- Roumanian, II.; 1874. (Roumanian.)
- Russian, III.; 1880. (Russian.)
- Spanish, VI.; 1884. (Spanish.)
- Swedish, VII.; 1879; Suppl., 1879. (Latin.)
- Swiss, II.; 1872; Suppl., 1876. (Latin.)
- United States, VI.; 1882. (English.)

[NOTE OF ED. AM. DR.—The Swedish Pharm. of 1879 is the third impression of the seventh edition, originally published in 1869. It is somewhat surprising to us that the author did not include the Portuguese Pharmacopœia of 1876, which is a very good one, and far superior, for instance, to the Spanish.]

Most of the pharmacopœias have adopted the Latin language for the

* "Universal-Pharmakopœe." Eine vergleichende Zusammenstellung der zur Zeit in Europa und Nordamerika gültigen Pharmakopœen. Von Dr. Bruno Hirsch. Vol. I., 8vo, Leipzig, pp. xvi. and 971.

official titles, though not all of them have adopted it for the text, as will be seen from the preceding table. The French, Spanish [Portuguese], and Roumanian are written in their respective vernaculars, and all of these, except the last, add the Latin titles as synonyms.

In the designation of the several drugs taken from the animal or vegetable kingdom, some of the pharmacopœias place the name of the part of the individual—viz., Cortex, Fructus, Herba, etc.—in front; for instance, the Belgian, Danish, Finnish, German, Swiss, Norwegian, Russian, and Swedish, which would say, therefore, *Cortex Cascarillæ*. Others transpose these names, as the British and Greek, which have *Cascarillæ Cortex*. The remainder use, as official titles, either the vulgar names or the systematic (scientific) names—for instance, *Absinthium* for *Artemisia Absinthium*; *Calamus* for *Acorus Calamus*—and either specify the particular part, which is intended to be used, in the definition or otherwise, or they omit to do so altogether.

In the titles of chemicals, some of the pharmacopœias place the electropositive constituent in front, while others reverse the order. For instance, hydrochloric acid is called *Acidum Hydrochloricum* by the Belgian, and, in their several vernaculars, by the French, Spanish, and Roumanian. The Danish, Norwegian, Russian, and Swedish call it *Acidum Hydrochloratum*, the others *Acidum Hydrochloricum*, except the Greek, which uses the old name *Acidum Muraticum*. Green sulphate of iron is called *Ferri Sulphas* by the British and U. S. Ph.; *Sulphas Ferri* by the Belgian; *Sulphas ferrosus* by the Danish, Finnish, Netherlands, Norwegian, and Swedish; and correspondingly, in the vernacular, by the French and Spanish; *Ferrum sulphuricum* by all the others. The names of the *acides* of aluminium, barium, calcium, etc., according to the old chemical nomenclature, appear in the titles of chemical salts in the French, Greek, Netherlands, Norwegian, Roumanian, Russian, and Swedish. In others the name of the metal itself is used. Many pharmacopœias designate certain commonly known substances, such as borax, alum, etc., by these very names, latinized, viz., *Borax*, *Alumen*, etc. Others again endeavor to express in the title the chemical composition, which sometimes leads to quite uncouth and impractical designations.

Almost all of the modern pharmacopœias arrange the titles of the official substances in one alphabetical order. Only the French, Greek, and Spanish separate the drugs and crude materials from the pharmaceutical and chemical preparations and compounds. While, however, the Greek and Spanish again enumerate the titles of the second part in one continuous alphabetical series, the French does this only in the first part (crude drugs), and subdivides the second part into three separate sections, respectively embracing chemical, galenical, and veterinary pharmacy; and the galenical is again subdivided into numerous sub-sections, each of them with a separate alphabetical arrangement, so that it is often difficult to find any title looked for, without consulting the index.

It is often said that a pharmacopœia should not be a text-book, that is, it should not attempt to teach. This principle is observed by some of the pharmacopœias quite rigidly, for instance, by the French, where the several titles of crude substances are merely enumerated, without any attempt at description or characterization. The same pharmacopœia, however, in its second part, decidedly infringes upon this principle in many instances. The same is often done by

the Spanish, Belgian, and Russian, in the directions for making the various preparations. This infringement of the principle above mentioned, however, can do no harm, as long as the given directions are correct. The infringement may have arisen from a laudable desire, on the part of the compilers, to insure the identity of the products, even when prepared by the less skilled members of the profession.

A much more serious defect of a pharmacopœia is the presence of riddles, that is, of such directions or statements, or requirements, the reasons for which are not sufficiently well known outside of the body of revisers, and may not even be known to every one of the latter. Examples of this sort are the omission of the object of certain tests directed to ascertain the purity of a chemical. Several of the older pharmacopœias have already avoided this blunder by the addition of a chemical symbol or a word in parenthesis. Among the recent ones this is done most completely and uniformly in the case of chemicals and many important crude drugs by the U. S. Ph. ["excellent Pharmacopœia of the U. S.," as Dr. Hirsch here expresses himself], and, in the case of vegetable drugs, by the Russian.

Chemicals and certain other products of difficult preparation are, as a rule, merely defined and more or less characterized by nearly all the modern pharmacopœias. Only the French and Spanish still give formulas for the preparation of alkaloids, acids, ethereal oils, numerous salts, etc., which are but rarely prepared by the apothecary.

The largest proportion of working formulæ in the several pharmacopœias is, however, devoted to the so-called galenical preparations, as well as to certain chemicals which are apt to vary according to the process adopted. Here we meet the most remarkable discrepancies. It might be supposed that the green sulphate of iron could be prepared, all over the world, equally well by one and the same process. The fact, however, is that, of sixteen different pharmacopœias, each directs a different method. For preparing *Acetum Scillæ*, sixteen out of seventeen pharmacopœias prescribe different processes. Even the descriptions and tests of such simple products differ sometimes in the most surprising and unaccountable manner. On the other hand, in the case of substances which are more difficult to prepare, and require more knowledge and judgment to test, the methods are frequently almost literally identical, showing that in such cases the different pharmacopœias have derived their version from one and the same source [or have copied from each other], while in the former case each has acted upon its own judgment, not needing any guide to go by.

Nearly all modern pharmacopœias have adopted the decimal or metric system, or the system of parts by weight. The British alone, in spite of the meritorious example of the Pharm. of the U. S. [see note at end of article] still retains the mixed method, and directs that all solids be weighed and all liquids be measured. The attempt made in the last revision of the Brit. Ph. to adopt a modified system of parts by weight, by the introduction of "parts" and "fluid-parts," accomplishes the object but imperfectly. The Spanish Ph. has adopted a system of rounding off fractional numbers, which, in many cases, leads to very abnormal and variable results, particularly when the figures given by the pharmacopœia have to be multiplied to make larger quantities of product. On the other hand, some pharmacopœias are too punctilious in giving fractional, and inconvenient figures, where they were not needed.

A much more important feature—

namely, the adjustment of certain groups of chemicals or solutions on the basis of their equivalents—has been, so far, only adopted by the Austrian, Hungarian, and Roumanian pharmacopœias, and even by these only in the case of the diluted acids. The author (Dr. Hirsch) has for many years advocated the adoption of a system in which the strength of the various diluted acids and the solutions of the caustic and carbonated alkalies, including ammonia, should be adjusted on the basis of their equivalents.

The normal properties of the chemical and pharmaceutical preparations are by no means treated with sufficient explicitness by all pharmacopœias. They, as well as the important reactions for identity, are often entirely absent.

A great advance has been made in the methods of testing the purity of preparations, particularly in the German and United States Pharms., by converting many qualitative into quantitative tests through the introduction of volumetric test-solutions. In contrast with these, it appears very strange that the new French Ph. does not contain a list of reagents, which none of the other pharmacopœias is without.

In comparing these different pharmacopœias, it is soon noticed that there is a sort of blood-relation between a certain number of them, which, in some cases, is even expressly acknowledged, or has been brought about intentionally. Very closely allied in every respect are the Austrian, Hungarian, and Roumanian. The Belgian, particularly in its last edition, shows many similarities to the French, while the older edition more nearly approached the Greek. The British and U. S. Phs. approach each other in many respects, and this is still more the case with the Danish, Norwegian, and Swedish, which were purposely composed in as uniform or similar a manner as possible. Nevertheless, the Norwegian has about 200 titles less than the Danish or Swedish, and the latter seems to have also paid some deference to the Russian. The last Finnish is closely related to the three Scandinavian Pharmacopœias, but still more so to the last German, from which it has often copied verbally, unfortunately without eliminating errors, even when such had been previously pointed out. The last French Ph. is in many respects not in advance of the previous edition of 1866, and has been probably but little influenced by other pharmacopœias.* It has retained a number of formulas which are certainly but rarely prepared in any dispensing establishment, and, on the other hand, has paid too little attention to the definition of the properties, and to the tests of purity of crude and manufactured articles. A large proportion of the tests which have been included is practically useless, and the text is full of errors, though most of them have been corrected in a supplement, entitled "Erratum." The new Spanish Pharm., which has evidently been somewhat influenced by the French, likewise stands comparatively isolated, in having a great number of preparations peculiar to itself. The Russian has much resemblance to the first German, but has evidently paid close attention to the criticisms and suggestions for improvement contained in the current literature.

While it is the duty of each nation having a pharmacopœia of its own to

* How little attention the French Pharmacopœia Committee has paid to other pharmacopœias which have appeared either previous to, or during the period of preparing the new edition, is evidenced, among other things, by the fact, that an official copy of the U. S. Ph. of 1882, sent to the French Commission, by vote of the Committee of Revision and Publication at the end of January, 1883, and accompanied by an official note signed by the presiding officers of the National Convention and the Committee of Revision, has to this day remained unacknowledged.

improve the latter at every new revision, none of them can afford to neglect the work accomplished by the others, but is bound to utilize for its own purposes whatever progress and advancement has been made by them. Among the large number of existing pharmacopœias there is *not one* which does not possess *some* points of merit over the others, either in general treatment of the subjects embraced, or in single articles. On the other hand, *none* of them is free from errors.

For this reason, each should be ready to accept knowledge from the other, so that every subsequent revision will make the work more perfect.

[NOTE BY ED. AM. DR.—Dr. Hirsch may not be aware that the signs of the times, in this country, point to the probability that the system of parts by weight, adopted in the last revision of the U. S. Ph., will again be abandoned in the next revision, at least in the preparation of tinctures, and liquids which are generally prescribed, as well as administered, by measure. The Committee of Revision of 1870 already had been directed to drop measures, but declined to do so, as the carrying out of the instructions would (as the Committee sums up its reasons; see U. S. Ph., 1870, p. xiv.) "entail so much expenditure of time, labor, and cost as to render the plan impracticable." The Committee was much censured for its failure to obey the instructions. The succeeding Committee of 1880 received the same directions from the Convention, and it *did* carry them out. For doing so, it has been probably as much blamed as the previous Committee had been for *not* doing. A permanent success of the plan to abandon measures entirely could be brought about only if physicians were to accustom themselves to prescribe liquids by weight. As this appears to be hopeless, to judge from previous experience, it will become an important question to decide, whether it will not be best to return to the former system. Possibly both may be combined. In such formulæ as the following:

Pulvis Cretæ Compositus.

Prepared chalk	30 parts.
Acacia, pd.....	20 "
Sugar, pd.....	50 "
	100 "

certainly no one will object to parts by weight. But in the case of a tincture, for instance, the physician wants to know at a glance, to how much of the crude drug a given volume of the preparation is equivalent. In the criticisms made upon the Committee of Revision, for its action in this matter, the fact of its having merely carried out its express instructions has often been left out of sight. The method of parts by weight was bound to be tried practically some time or other. If it never had been tried, there would always have been a great clamor for it. If after a thorough trial, it is declared by a respectable majority to be unsuited or impracticable for this country, it will be a simple matter to brush it away, and to substitute something better for it.]

Apone: a New Kind of Pain-Expeller.

THE following is said to be the mode of preparation of a sort of pain-killer recommended by Dr. Poulet under the name of *apone*:

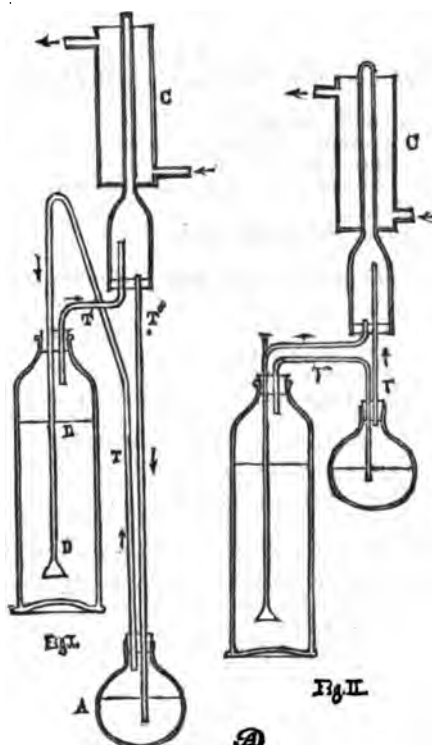
Capsicum.....	20 parts.
Water of Ammonia.....	10 "
Oil of Thyme.....	1 part.
Chloral.....	1 "
Alcohol, 60%.....	100 parts.

Digest the capsicum with the alcohol and ammonia during four weeks, filter, and add the other ingredients.—After *Pharm. Zeit.*

APPARATUS FOR EXTRACTING DISSOLVED SUBSTANCES FROM LIQUIDS BY MEANS OF LIGHT VOLATILE SOLVENTS.

APPARATUS for this purpose have been recently described by Neumaier (*Ber. d. Deutsch. Gesell.*, xviii., 3,061; *AMERICAN DRUGGIST*, March number, 1886, p. 49). In this case a siphon was used to remove the solvent after it had passed through the liquid to be extracted, and I had myself been using an arrangement of somewhat similar principle. But in the course of work, the following simple method was found preferable:

The solvent in the flask A (Fig. 1) is heated by means of a water-bath, so that the vapor passes through the tube T to the bottom of the liquid to be treated with it (L), which is placed in the vessel B. As B is tightly corked, the condensed solvent, collecting above L, is next forced up the tube T' (which opens above the surface of L) and into the open condenser C, from the bottom of which it is carried off by the tube T'' to return to A. The extra height of T above B checks regurgitation when A cools. It is evident that external heat



Neumaier's extraction apparatus.

may be applied to B to aid the extraction. If, on the other hand, it is necessary to avoid heating L by the condensation of the solvent, the arrangement shown in Fig. 2 is adopted. Here the vapor passes first to the condenser C by the tube T, and the condensed solvent collects in T', which is of such a height that, by the weight of the column of liquid in that tube, a stream is forced through L and up T', thus effecting the return to A. Some arrangement for spreading the solvent on its entrance to L will be found useful. For this a funnel (D) was fused to the tube T (Fig. 1), and over its mouth platinum pierced with pin-holes was folded.—ARNOLD EILOART, B.Sc., in *Chem. News*, 1886, 281.

An Elastic Mucilage.

THE *Chemische Centralblatt* gives the following directions for an elastic mucilage:

Dissolve 1 part of salicylic acid in 20 parts of alcohol, add 3 parts of soft soap and 3 parts of glycerin. Shake thoroughly, and add the mixture to a mucilage prepared from 93 parts of gum Arabic and the requisite amount of water (about 180 parts).

This mucilage is said to keep well, and, when it dries, to remain elastic without tendency to cracking.

Ozokerite Asphalt.

A NEW application of ozokerite has been recently discovered in Russia, where it is now used for making ties in the Transcasian railroad, which has already passed Askabad, and nearly reached Merv. The process of manufacture is very simple and inexpensive. Kyra, the local name for ozokerite, is found there in thin layers of 7 inches in thickness. In its primitive state, it contains a certain percentage of decayed matter. To remove this, the ozokerite is melted in large caldrons, the refuse sinks to the bottom, and the pure ozokerite collects at the top. This purified ozokerite, melted and mixed with 75 per cent of limestone and 25 per cent of fine gravel, gives a very good asphalt, which is pressed in boxes shaped like railroad ties. Notwithstanding the high temperature, which reaches 48° R. (140° F.), the ties retain their shape and hardness.

These asphalt ties are used all along the road, except at the ends and centre of every rail, where, as yet, wooden ties are employed. In this way, about £160 per mile is economized.—*Chem. and Drugg.*

SELECTIONS FROM THE REVISED HOSPITAL FORMULARY

OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION OF THE CITY OF NEW YORK.

THE Formulary of the Hospitals of the City of New York, under the charge of the Commissioners of Public Charities and Correction, has been out of print for several years. A new and revised edition has been prepared for distribution among the physicians and apothecaries of the department, and is shortly to be issued.* A large number of the preparations contained in the formulary have found their way into general practice, and inquiries for one or the other formula are constantly being directed to some one connected with the department. In order to comply with these requests, we shall publish a selection of the formulas, omitting those for which standard formulæ are available in other works of reference.

The titles by which the several preparations are known in the different institutions have been left unchanged, though some of them would lose their definiteness if used promiscuously or without reference to the source from which they have been taken. For instance, the very first formula, entitled "Cough Mixture," is that of a preparation in common use at the Out-door Dispensary of Bellevue Hospital. Outside of this particular institution, the title "Cough Mixture" might be applied to an infinite variety of compounds. For this reason, the name of the institution in which such preparations are in vogue should be regarded as an intrinsic part of the title.

A large proportion of the formulæ which will be given by us have been in use for years, and have survived numerous changes in the medical staffs of the institutions. Many of the formulæ have become favorite prescriptions of former internes, though they may be but rarely quoted by their hospital titles when they are prescribed in private practice.

The directions under each formula are purposely given in English, the Latin being restricted to the names of the ingredients. The *drachm* sign, which in many fonts of type is not sufficiently distinctive from the *ounce* sign, when quick reference is to be made to a formula, has been replaced

* The forthcoming edition is for use in the public institutions, and is not for sale. We mention this fact here to spare our readers the disappointment of finding this out themselves, after a deal of correspondence.

by the abbreviation *dr.* It would be well if this were generally adopted by the profession.

Hospital Formulary.

I. MIXTURES FOR INTERNAL USE.

A. FOR DISEASES OF THE RESPIRATORY ORGANS.

1. "Cough Mixture" (Bureau O. D. P.).*

℞ Syr. Tolutani,
Syr. Pruni Virg.,
Tr. Hyoscyami,
Spir. Æther. Comp.,
Aque.....āā p. seq.

Mix.

Dose: A teaspoonful. (Dr. E. G. Janeway.)

2. "Cough Mixture for Adults" (Inf. Hosp.).

℞ Ammon. Chloridi.....dr. 1
Spir. Æther. Comp.....fl. dr. 6
Syr. Pruni Virg.....fl. 3 2
Aque.....q. s. ad fl. 3 4

Dissolve and mix.

Dose: A teaspoonful.

3. "Cough Mixture for Infants" (Inf. Hosp.).

℞ Tr. Opii Camph.,
Spir. Ammon. Arom.,
Syr. Pruni Virg.....āā fl. 3 1
Ext. Ipecac. Fl.....m 80
Aque.....q. s. ad fl. 3 8

Mix.

Dose: A teaspoonful.

4. Emulsio Expectorans (Hart's Isl. Hosp.).

℞ Morphine Sulph.....gr. 1
Syr. Scillæ.,
Syr. Ipecac.....āā fl. 3 1
Syr. Tolutani.,
Syr. Pruni Virg.....āā fl. dr. 6
Tr. Benzoin. Comp.,
Tr. Sanguinaria.....āā fl. dr. 2

Dissolve and mix.

Dose: A teaspoonful.

5. Mistura Ammonii Carbonatis (Bureau O. D. P.).

℞ Ammonii Carbonat.,
Ext. Glycyrrhizæ.....āā gr. 80
Syr. Senegæ.....fl. dr. 4
Syr. Ipecac.....fl. dr. 2
Syr. Tolutani.....fl. dr. 4
Aque Cinnam.....q. s. ad fl. 3 4

Dissolve and mix.

Dose: A teaspoonful, for children. (Dr. G. H. Bosley.)

6. Mistura Antasthmatica (Bureau O. D. P.). ("Asthma Mixture.")

℞ Codeinæ Sulphatis.....gr. 4
Potassii Iodidi.....gr. 82
Chloroformi.....m 0
Syrupi.....fl. 3 1
Mucilag. Acaciæ.....q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful. (Dr. S. S. Burt.)

7. Mistura Asthmatica (Bell. and Char. Hosp.).

℞ Morphine Sulph.....gr. 1
Aque,
Spir. Ætheris Comp...āā fl. 3 1

* Where no special institution is quoted by name, it is understood that the preparation or compound is used in several or in all institutions. The abbreviated names stand for the following:

Bell. Hosp.=Bellevue Hospital, New York City.
Char. Hosp.=Charity Hospital, Blackwell's Island.
Bureau O. D. P.=Bureau of Medical and Surgical Relief for the Out-Door Poor (Bellevue Dispensary).

Gouv. Hosp.=Gouverneur Hospital.
Hart's Isl. H.=Hart's Island Hospital.
Inf. Hosp.=Infant's Hospital, Randall's Island.
Rand. Isl. H.=Randall's Island Hospital.
Ins. As.=Insane Asylum, Ward's Island.
Lun. As.=Lunatic Asylum, Ward's Island.
99th St. Hosp.=Ninety-Ninth Street Reception Hospital.

West. Disp.=Bureau Med. and Surg. Relief for the Out-Door Poor of the 23d and 24th Wards (Westchester Ave.).

Dissolve and mix.

Dose: A teaspoonful.

Note.—In the public hospitals, the so-called United States solution of morphine (1 grain in 1 fluidounce) is still very generally used. As it is no longer official, it has been thought advisable not to direct it as a constituent of a mixture or compound, but to specify the quantity of morphine and water, separately.

8. Mistura Bechica.

"Cough Mixture (Steurer)" (Bureau O. D. P.).

℞ Tr. Opii Camph.,
Tr. Hyoscyami,
Syr. Pruni Virg.,
Syr. Tolutani.....āā part seq.

Mix.

Dose: A tablespoonful. (Dr. J. A. Steurer.)

9. Mistura Bronchi (Bureau O. D. P.).

℞ Ammonii Carb.....gr. 10
Syr. Pruni Virg.....m 80
Syr. Ipecac.....fl. dr. 1 1/2
Tr. Opii Camph.....fl. dr. 1
Aque.....q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful for children. (Dr. A. R. Robinson.)

10. Mistura contra Tussim.

"House Cough Mixture" (Bell. Hosp.).

℞ Tr. Hyoscyami,
Tr. Opii Camph.,
Syr. Tolutani,
Syr. Scillæ.....āā part seq.

Mix.

Dose: A teaspoonful.

11. Mistura Expectorans (Bureau O. D. P.).

℞ Ammonii Carb.....gr. 16
Ext. Senegæ Fl.,
Ext. Scillæ Fl.,
Tr. Tolutanæ.....āā fl. dr. 2
Aque.....q. s. ad fl. dr. 4
Syrupi.....q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful.

12. Mistura Expectorans (Char. Hosp.).

℞ Tr. Sanguinaria.....fl. dr. 1
Tr. Opii Camph.,
Syr. Scillæ,
Syr. Tolutani.....āā fl. dr. 2
Aque.....q. s. ad fl. 3 2

Mix.

Dose: A teaspoonful.

13. "Mistura Expectorans (Children)" (Bureau O. D. P.).

℞ Syr. Senegæ,
Syr. Pruni Virg.,
Syr. Acaciæ.....āā part seq.

Mix.

Dose: A teaspoonful. (Dr. Th. H. Holgate.)

14. Mistura Expectorans (Stokes). Stokes' Expectorant.

℞ Ammonii Carb.....gr. 82.
Ext. Scillæ Fl.,
Ext. Senegæ.....āā fl. dr. 1
Tr. Opii Camph.....fl. dr. 6
Aque.....fl. dr. 4
Syr. Tolutani.....q. s. ad fl. 3 4

Dissolve and mix.

Dose: A teaspoonful.

15. Mistura Expectorans ("Struma") (Bureau O. D. P.).

℞ Ammonii Chloridi.....gr. 45
Syr. Ferri Iodidi.....m 45
Syr. Senegæ,
Syr. Pruni Virg.,
Syr. Acaciæ.....āā fl. 3 1
Olei Morrhuæ.....fl. 3 8

Dissolve and mix.

Dose: One and one-half teaspoonfuls every three hours, to a child of four years. In bronchitis with struma. (Dr. Th. H. Holgate.)

16. Mistura Glonoini. (Mistura Nitroglycerini.)

℞ Spiritus Glonoini (1℥).....gtt. 1
Syrupi.....fl. 3 1/2

Mix.

One dose, to be taken every 4 hours in angina pectoris, asthma, etc.

Note.—Spiritus Glonoini is a 1-per-cent alcoholic solution of nitroglycerin.

17. Mistura Glycyrrhizæ (Bureau O. D. P.).

℞ Ammonii Chloridi,
Ext. Glycyrrhizæ pulv.....āā dr. 2
Tr. Opii Camph.....fl. dr. 2
Aque.....q. s. ad fl. 3 4

Mix.

Dose: A teaspoonful. (Dr. D. Brekes.)

18. Mistura Glycyrrhizæ Composita (Bureau O. D. P.). (Brown Mixture, modified.)

℞ Ext. Glycyrrhizæ Fl.....fl. dr. 2
Vini Antimonii.....fl. dr. 2
Spir. Æther. Nitr.....fl. dr. 1
Tr. Opii Camph.,
Syrupi.....āā fl. dr. 4
Aque.....q. s. ad fl. 3 4

Mix.

Dose: 1 to 4 teaspoonfuls.

19. Mistura Hydrocyanica (Bell. Hosp.).

℞ Acidi Hydrocyanici dil.....m 32
Morphinæ Sulphatis.....gr. 1
Syrupi Tolutani.....fl. 3 1
Aque.....q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful.

Note.—This mixture was formerly directed to be made with cyanide of potassium, instead of with hydrocyanic acid. But as this salt always contains more or less carbonate of potassium, it is incompatible with salts of alkaloids, as it precipitates the latter, and the whole of the precipitated alkaloid may accidentally be taken with the last dose.

20. Mistura Hydrocyanica (Char. Hosp.).

℞ Potassii Cyanidi.....gr. 2
Vini Antimonii.....fl. dr. 2
Syr. Tolutani,
Mucilag. Acaciæ.....āā fl. dr. 4
Aque.....q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful.

21. Mistura Hyoscyami Composita.

℞ Acidi Hydrocyanici dil.,
Chloroformi.....āā m 80
Tr. Hyoscyami,
Aque Camphoræ.....āā fl. 3 1

Mix.

Dose: A teaspoonful.

22. Mistura Pectoralis (Gouv. Hosp.).

℞ Antimon. et Potass. Tart.,
Morphinæ Sulphatis.....āā gr. 1/2
Ext. Cubebæ Fl.....m 16
Syr. Tolutani.....fl. 3 2

Dissolve and mix.

Dose: A teaspoonful. (Dr. C. F. Stokes.)

23. Mistura Pertussis (Bureau O. D. P.).

℞ Potassii Bromidi.....gr. 8
Tr. Opii Camph.,
Syr. Ipecac.,
Syr. Lactucarii,
Syr. Tolutani.....āā fl. dr. 2
Aque.....q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful.

24. "Mistura Pertussis (Children)" (Bureau O. D. P.).

℞ Ammonii Bromidi,
Ferri et Quinina Cit.....āā dr. 1 1/2
Syr. Senegæ,
Syr. Pruni Virg.,
Syr. Acaciæ.....āā fl. 3 1

Dissolve and mix.
Dose: A teaspoonful for a child of four years. (Dr. Th. H. Holgate.)

25. *Mistura Potassii Bromo-Cyanidi* (Bureau O. D. P.).

R Potassii Bromidi.....dr. 4
Potassii Cyanidi.....gr. 4
Syr. Pruni Virg.....fl. $\frac{3}{4}$

Dissolve and mix.
Dose: A teaspoonful.

26. *Mistura Potassii Chloratis* (Bureau O. D. P.).

R Potassii Chloratis,
Ammonii Chloridi..... $\frac{5}{8}$ dr. 1
Ext. Glycyrrhizæ Fl.....fl. dr. 2
Aque.....q. s. ad fl. $\frac{3}{4}$

Dissolve and mix.
Dose: A teaspoonful. (Dr. G. G. Wheelock.)

27. *Mistura Potassii Iodidi et Hoffmanni* (Bureau O. D. P.).

R Potassii Iodididr. 3
Tr. Tolutanæ,
Ext. Pruni Virg. Fl... $\frac{5}{8}$ fl. dr. 1
Syrupi..... $\frac{5}{8}$ fl. $\frac{3}{4}$ 1
Aque.....q. s. ad fl. $\frac{3}{4}$ 2
Spir. Æther. Comp.....fl. $\frac{3}{4}$ 2

Dissolve and mix.
Dose: A teaspoonful. (Dr. E. G. Janeway.)

28. *Mistura Potassii Iodidi et Hoffmanni Composita* (Bureau O. D. P.).

R Ammonii Carbonatgr. 50
Potassii Iodididr. 8
Syr. Pruni Virg.,
Spir. Æther. Comp.... $\frac{5}{8}$ fl. $\frac{3}{4}$ 1

Dissolve and mix.
Dose: A teaspoonful. (Dr. W. H. Katzenbach.)

29. *Mistura Potassii Nitratis* (Bureau O. D. P.).

R Potassii Nitratis.....gr. 1
Spir. Æther. Nitr.,
Syr. Ipecac..... $\frac{5}{8}$ fl. $\frac{3}{4}$ 2
Syr. Pruni Virg.....fl. dr. 2
Aque.....q. s. ad fl. $\frac{3}{4}$ 1

Dissolve and mix.
Dose: A teaspoonful for children. (Dr. A. R. Robinson.)

30. *Mistura Sedativa* (Bureau O. D. P.).

R Acidi Hydrocyanici dil.,
Chloroformi Purificati... $\frac{5}{8}$ fl. $\frac{3}{4}$ 2
Tr. Hyocyami,
Syr. Tolutani,
Aque Camphoræ,
Mucilag. Acaciæ..... $\frac{5}{8}$ fl. dr. 4

Mix.
Dose: A teaspoonful. (Dr. W. H. Katzenbach.)

31. *Mistura Tolutana Acida*.

R Tr. Tolutanæ.....fl. dr. 2
Acidi Acetici.....fl. dr. 1 $\frac{1}{2}$
Syr. Senegæ.....fl. dr. 4
Syr. Pruni Virg.....fl. $\frac{3}{4}$ 2

Mix.
Dose: A teaspoonful.

32. *Mistura "Tussis"* (Bureau O. D. P.).

R Tr. Nucis Vomicae.....fl. dr. 2
Vin. Ipecac.....fl. dr. 2 $\frac{1}{2}$
Syr. Sarsaparillæ Co.,
Syr. Senegæ..... $\frac{5}{8}$ fl. $\frac{3}{4}$ 1 $\frac{1}{2}$

Mix.
Dose: A teaspoonful, for children. (Dr. W. F. Ackermann.)

33. "Night-Sweat Mixture" (Bureau O. D. P.).

R Atropinæ Sulphatgr. $\frac{1}{10}$
Strychninæ Sulphat.....gr. $\frac{1}{10}$
Syrupi.....fl. dr. 2
Aque.....fl. dr. 2

Dissolve and mix.
One dose. (Dr. S. S. Burt.)

34. *Whooping Cough Mixture* (Inf. Hosp.).

R Acidi Nitrici dil.....fl. dr. 1
Syr. Pruni Virg.....fl. dr. 4
Aque.....q. s. ad fl. $\frac{3}{4}$ 2

Mix.
Dose: A teaspoonful.

B. TONIC MIXTURES.

35. *Lemon Tonic* (Char. Hosp.).

R Cinchoninæ Sulphat.,
Acidi Citrici..... $\frac{5}{8}$ gr. 30
Syrupi.....fl. $\frac{3}{4}$ 1 $\frac{1}{2}$
Tr. Ferri Chloridi.....fl. $\frac{3}{4}$ 30
Aque.....q. s. ad fl. $\frac{3}{4}$ 4

Dissolve and mix.
Dose: A teaspoonful.

36. *Mistura Acidi Muriatici* (Bureau O. D. P.).

R Acidi Hydrochlorici.....fl. 45
Tr. Gentian. Comp.,
Aque..... $\frac{5}{8}$ fl. $\frac{3}{4}$ 2

Mix.
Dose: A teaspoonful.

37. *Mistura Ferri et Ammonii Citratæ* (Bureau O. D. P.).

Ferri et Ammon. Citr.,
Ammonii Carbonat.... $\frac{5}{8}$ gr. 82
Syrupi,
R Aque Anisi..... $\frac{5}{8}$ fl. $\frac{3}{4}$ 2

Dissolve and mix.
Dose: A teaspoonful. (Dr. J. L. Smith.)

38. *Mistura Ferri et Bismuthi* (Bureau O. D. P.).

R Ferri et Bismuthi Citr.....gr. 60
Aque.....fl. $\frac{3}{4}$ 1

Dissolve and mix.
Dose: A teaspoonful. In dyspepsia, gastric intolerance of consumptives, etc.

Note.—Citrate of Iron and Bismuth is a compound containing equal parts, by weight, of citrate of iron and ammonium and citrate of bismuth and ammonium.

39. *Mistura Ferri et Cinchoninæ* (I.) (Bureau O. D. P.).

R Cinchoninæ Sulphatis.....gr. 60
Tr. Ferri Chloridi.....fl. dr. 2
Aque.....q. s. ad fl. $\frac{3}{4}$ 4

Dissolve and mix.
Dose: A teaspoonful.

40. *Mistura Ferri et Cinchoninæ* (II.) (Char. Hosp.).

R Cinchoninæ Sulphatis.....gr. 60
Tr. Ferri Chloridi.....fl. dr. 2
Aque.....fl. $\frac{3}{4}$ 2

Dissolve and mix.
Dose: A teaspoonful.

41. *Mistura Ferri et Lactis*.

R Syrupi.....fl. dr. 2
Lactis Recentis.....fl. $\frac{3}{4}$ 2
Tr. Ferri Chloridi.....dosim unam.

To the mixture of Syrup and Fresh Milk, freshly prepared for the purpose, add the prescribed dose of Tincture of Iron, mix quickly, and administer it. The taste of the iron is completely covered by the vehicle.

42. *Mistura Ferri et Quininæ*.

R Quininæ Sulphatis.....gr. 30
Tr. Ferri Chloridi.....fl. dr. 2
Aque.....q. s. ad fl. $\frac{3}{4}$ 2

Dissolve and mix.
Dose: A teaspoonful.

43. *Mistura Iodata* (Bureau O. D. P.).

R Potassii Iodidi.....dr. 2
Syr. Ferri Iodidi.....fl. dr. 4
Tr. Calumbæ.....q. s. ad fl. $\frac{3}{4}$ 2

Dissolve and mix.
Dose: A teaspoonful.

44. *Mistura Nigra* (Bureau O. D. P.).

R Ferri et Ammon. Citr.....gr. 80
Tr. Cinchonæ Comp.....fl. $\frac{3}{4}$ 2

Dissolve and mix.
Dose: A teaspoonful.

45. *Mistura pro Anæmia* (Bureau O. D. P.).

R Ammonii Chloridi.....dr. 2
Tr. Ferri Chloridi.....fl. dr. 3
Glycerini.....fl. $\frac{3}{4}$ 1
Aque.....q. s. ad fl. $\frac{3}{4}$ 3

Dissolve and mix.
Dose: A teaspoonful. (Dr. W. H. Katzenbach.)

46. *Mistura Quininæ Dulcis*.

R Quininæ Sulphatis,
Glycyrrhizini Ammoniaci (U. S. Ph.)..... $\frac{5}{8}$ gr. 15
Elixir Aromatici.....fl. $\frac{3}{4}$ 1

Dissolve the Ammoniated Glycyrrhizin in the Aromatic Elixir, and suspend in it the Sulphate of Quinine, using no acid, as this would precipitate the glycyrrhizin.

Inoculation Against Yellow Fever.

RECENT reports appear to confirm the claim made by Dr. Domingo Freire, Professor of Physiology at the Medical College of Rio de Janeiro, that he has succeeded in discovering the microbe of yellow fever, and is enabled, by suitable inoculation of the healthy subject, to protect the latter against attack by this dread disease. Some time during the year 1880, he observed numerous microbes in the blood of persons who had died of yellow fever. These microbes were in various stages of development, and were enveloped by a dark-colored cellular substance, which Dr. Freire regards as the true poisonous principle of the disease. During November, 1883, he inoculated himself, as well as several colleagues, with this substance, and induced some four hundred other persons, during the next few months, to undergo inoculation at his hands. According to his statement, the inoculation is followed by symptoms resembling that of a mild type of the fever: pain in the eyeball, headache, loss of appetite, and general lassitude. After two or three days, complete recovery. A few hours after inoculation, the blood will be found to contain the above-mentioned microbes, but these are enveloped in a much thinner cellular tissue, which soon shrivels up and disappears.

So far as the results reported seem to show, the immunity against attacks of yellow fever, among those who have been inoculated, is quite remarkable, only a very small percentage having been attacked. It is too soon to declare the success of the method as fully confirmed, but there is every hope that the terrible scourge, which has often devastated large districts of this country, may be brought under sanitary control.

Iodism Cured by Sulphanilic Acid.

THE extremely depressing effect and severe catarrhal symptoms occasionally produced by the administration of iodides, and known as iodism, has been explained by Ehrlich as due to the fact that nitrates in the presence of weak acids set free the iodine, and on this theory he has experimented with sulphanilic acid as a remedy for the symptoms produced. This substance, having a powerful affinity for nitric acid, possibly prevents this reaction, since, when given in doses of 4, 5, or 6 grains, in half the cases the iodism vanished as if by magic. As much as 7 grains has been given. To render it soluble, one part of bicarbonate of sodium is added to the water used for each 1 $\frac{1}{2}$ parts of sulphanilic acid.—*Med. Chron.*, p. 135; and *Pharm. Journ.*

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EDITORIAL.

THE circular of the Committee on National Formulary of the American Pharmaceutical Association, published elsewhere on this page, draws attention to the necessity of forwarding to it, as soon as possible, any contributions which it is intended should be incorporated in its report. The committee, which consists of five members, has had the assistance of the three pharmaceutical societies of New York and Brooklyn, and has held meetings almost every week since October of last year. It has made a large number of experiments and is entitled to say that it has accepted nothing without proper investigation and study. While the committee has been supported and encouraged by the offer of assistance, or actual contributions, from various associations and persons, it has encountered a serious, but not unexpected, difficulty in trying to harmonize antagonistic formulas and processes. That such differences would occur was, of course, well known. In fact, it was the very existence of these differences which called into life the predecessor of the National Committee, and which culminated in the production of the New York and Brooklyn Formulary. The National Committee, realizing that a violent equalization of discordant formulas—particularly at the very outset of the undertaking—would jeopardize the success of the latter, has endeavored to make such selections as are believed will be acceptable to a majority of the members of the profession, subject, of course, to further revision and improvement. In doing this, it became necessary, in several instances, when widely different formulas were submitted for one and the same preparation, to select one and to exclude all others. Whether the Committee has chosen the proper one, is a question which the experience of the future will decide. But it may be confidently

expected that every selection, and indeed every action of the Committee has been made in good faith, with a single eye to the object to be accomplished.

The National Formulary does not partake of the dignity and importance of a pharmacopoeia. While in the composition of the latter work it is expected that the practical knowledge of the revisers shall be rigidly controlled and kept in check by considerations of science, ethics, and law, the restrictions which may be placed around the Formulary are much more loose and, at the present time, hardly definable. The formulary may perhaps be defined as "the standard and recognized guide for the preparation of such compounds as are not official in our pharmacopoeia, but which are above the level of mere trade-receipts, or are of a trivial or improper character." Accordingly, the Formulary may contain:

1. Such articles and compounds as have once been official (or official), but which have been discarded, though still in use.

2. Such as have not yet been incorporated into the pharmacopoeia, either because they have only been introduced since the last revision, or because they may have appeared to the several former Committees of Revision as not of sufficient merit or importance to be recognized.

3. Such as are official in other pharmacopoeias, and are used to some extent in this country.

Regarding the latter, it might be urged that every pharmacist ought to be in possession of the necessary works of reference to enable him to find the formulas desired. This argument may, however, be simply turned around by saying: Incorporate them in the Formulary, and he will have the work of reference.

The National Committee, in fact, has incorporated, in their new list, a small number of preparations taken from foreign pharmacopoeias; but it has, for the present, only selected those which are of the most frequent occurrence, and it will, moreover, present them in a form acceptable to the American pharmacist. Subsequent Committees may add others or eliminate some of those now incorporated, if found necessary.

There is one feature connected with National Formulary that is of considerable importance, and has not as yet been pointed out. It is this, that the Formulary will be able to serve as the "pension office" for such official preparations as may, at a new revision, be discarded from the work. Every Committee of Revision, since perhaps 1840, has been criticised for leaving in the Pharmacopoeia, or introducing therein, a large number of preparations having the same ultimate therapeutic object—for instance, more than 20 different salts or compounds of iron. Their invariable excuse has been that some of these compounds were still used, though perhaps to a slight extent only, in some sections of the country, and the Committees felt compelled to provide formulas for them in order to insure their uniformity. Should the next Committee of Revision understand that the American Pharm. Assoc. would provide a retiring place for such preparations, by which their continued uniformity could be assured until such time as they may cease to be used or perhaps again require official recognition, the list of official titles in the Pharmacopoeia could be greatly reduced.

While it is not our intention to anticipate any of the report or recommendations of the National Committee, to be made at the next meeting, there is one point to which we now wish to draw attention, as it is likewise of some importance. It may not be generally known that the method

by which the Committee has accomplished most of its work is by means of circulars containing copies of the formulas under discussion, which are sent to every member for study and examination. It would have involved too much labor to repeat the issue of every circular, so as to embody the alterations and corrections made at each meeting. After the chairman has prepared the final manuscript copy, there will be no other chance for the members to examine the formulas singly and critically, unless the Association should come to their aid. That is, the Committee which drew up the report ought to have the opportunity of reading the proofs, with power to make such alterations and corrections as may be found necessary, and to see their work through the press. It is only when each member has a chance of calmly reading the proofs, and comparing one formula with another already printed, that he will be able to give an intelligent verdict. The privilege of thus seeing their own report through the press ought to be accorded to this and to every succeeding Committee on National Formulary, and arrangements for printing this report should be made immediately after the annual meeting, so that the report may be in the hands of the new Committee as soon as possible. The report ought to be printed in the same size and style as the Proceedings, and the pages should be electrotyped, both for furnishing pamphlet reprints, if such are required, as well as for incorporation in the Proceedings.

American Pharmaceutical Association.

COMMITTEE ON NATIONAL FORMULARY.

THE Committee on National Formulary of the A. P. A., appointed at the last meeting held at Pittsburg, has arrived at a point in its work when it becomes desirable that all contributions, intended for its use by pharmaceutical associations or by individuals, should be placed in its hands, in order to be incorporated in the report to be presented at the next meeting. The Committee desires here to tender its acknowledgments and thanks for the support and assistance it has received from many quarters, and it hopes to become the recipient of still further aid before it closes its labors. Any contributions which can reach the undersigned before August 15th will be included in the final report.

Respectfully,

CHARLES RICE,
Chairman of Committee.

Cocaine Aided by Electricity to Act as a Local Anæsthetic.

It is well known that the simple application of a cocaine solution upon the sound skin has no anæsthetic effect. This may, however, be brought about, according to Dr. Wagner, of Vienna, by combining an electric current with the cocaine. It is known that the electric current has the property of causing the forward movement of fluids which are contained in capillary tubes—this is called the cataphoric force or effect of the electric current. If the electrodes of a battery are moistened with a solution of cocaine, it has been found that the latter is propelled into the cellular tissue, causing the skin to become anæsthetic within a few minutes, so that it may be punctured with needles or cut with knives without causing any sensation or feeling of pain. Any desired amount of skin surface may in this manner be made anæsthetic. The anæsthesia lasts ten to fifteen minutes, but may be prolonged by applying an Esmarch bandage previous to the application of cocaine.—*Pharm. Post.*

NOTES ON PRACTICAL PHARMACY.*

(Continued from p. 129.)

DRUGS WHICH UNDERGO DECOMPOSITION WHEN MIXED WITH OTHERS (INCOMPATIBLE SUBSTANCES).

[The list given by Hager might be extended almost indefinitely. It is, however, impracticable to provide for all possible emergencies; and, as the actual occurrences at the prescription counter have been kept in view by the author, rather than theoretical possibilities, we have altered the original draft but little.—ED. AMER. DRUG.]

Mention will here be made only of those drugs in most common use which, when mixed with certain other drugs, are either decomposed or suffer some change by reason of which their intended effect is either destroyed, lessened or increased, or which yield mixtures which a physician slightly skilled in the art of compounding might suppose were conformable to rule, or which would be productive of danger to the patient. It is nevertheless true that usage sanctions some mixtures of incompatible substances, which may be intentionally prescribed by the physician. These are marked in the following list with an asterisk (*).

Acida (Acids in general)—Alkalies, alkaline liquids, acetates, metallic oxides.

Acidum arseniosum—Lime-water, oxide of iron, magnesia.

Acidum salicylicum—Salts of iron, iodide of potassium, lime-water.

Acidum tannicum (tannin, substances containing tannin)—Gummy substances, all of the metallic salts, lime-water, carbonates of alkalies, bicarbonates of alkalies, albumen of egg, gelatin, chlorine water.

Albumen (white of egg)—Acids, alcohol, substances containing tannin, corrosive sublimate.

Alkaloid salts in general—Substances containing tannin, tannin (*), carbonates of alkalies, and alkaline earths, iodine, compounds of iodine, licorice (*), concentrated mucilages (carrageen, salep), tinctura rhei aquosa, tinctura scillæ kalina, tinctura guaiaci ammoniata.

Aluminii sulphas—Alkalies, alkali carbonates.

Ammonii bromidum—Mineral acids, alkali carbonates, chlorine, chloride of potassium, bichromate of potassium, nitrate of silver, nitrate of mercury, calomel.

Ammonii chloridum, Ammonii phosphas—Carbonates of fixed alkalies and alkaline earths.

Amyl nitrus—Alcohol, tinctures, carbonates of alkalies, calomel, salts of lead, ferrous salts (protosalts of iron), iodide of potassium.

Apomorphine (hydrochlorate)—Carbonate of sodium, bicarbonate of sodium, oxides of iron, salts of iron, iodine, substances containing tannin.

Argenti nitrus, Nitrate of silver—Hydrochloric acid, sulphuric acid, acetic acid, tartaric acid, or salts of these acids; also prussic acid, aqua amygdalarum amarum, aqua lauro-cerasi, iodine, iodide of potassium, bromide of potassium, carbonates of alkalies and alkaline earths, sulphide of antimony, sulphur.

Barii chloridum—Sulphuric acid, phosphoric acid, salts of these acids, salts of carbonic acid, medicinal wines, infusions of plants.

Bismuthi subnitrus—Substances containing tannin, sulphur, sulphide of antimony, calomel, calx chlorata, chloride of lime, organic substances, especially ethereal oils, substances containing tannin, sulphur, or sulphides.

Calx, Liquor calcis—Acids, carbonates, salts of ammonium, metallic salts, tartrates, infusions of plants, tinctures, substances containing tannin.

Calcii chloridum—Sulphates, phosphates, tartrates, and carbonates, calomel.

Chloral hydras—Water (*slow decomposition) warm water, carbonates of alkalies, salts of alkalies, with vegetable acids, salts of ammonium, nitrate of mercury, calomel.

Chlorum, Aqua chlori—Alkalies, carbonates of alkalies, salts of ammonium, salts of vegetable acids, nitrate of silver, salts of lead, substances containing tannin, gums, vegetable extracts, tinctures, vegetable decoctions and infusions, syrups made of infusions of plants, milk, emulsions, etc. (The odor and taste of chlorine disappear at once or in a short time.)

Digitalis—Substances containing tannin, acetate of lead, iodine, iodide of potassium, carbonates of alkalies.

Ferrum pulveratum, Ferrum reduatum—Aloes, vegetable infusions, extracts (*), substances containing tannin, metallic salts, alkaloid salts (*).

Ferri sulphas, or any soluble Salts of iron—Carbonates of alkalies (*), infusions of plants, extracts (*), substances containing tannin, mucilage.

Gum arabic (Acacia)—Chloride of iron (*), salts of lead, alcohol, ethereal tinctures, borax.

Gum resins: Asafoetida, Ammoniacum, Galbanum—Metallic salts, many ethereal oils, distilled aromatic waters, camphor.

Hydrargyri chloridum corrosivum, Corrosive sublimate—Carbonates, lime-water (*), iodide of potassium, opium (*), infusions of plants, substances containing tannin.

Hydrargyri chloridum mite, Calomel—Acids, acid salts, carbonates of the alkalies, lime-water (*), chloride of ammonium, liquor ammonii anisatus, iodine, iodide of potassium, chloride of iron, chloride of iodine, sulphur, sulphide of antimony (*), bitter almonds, emulsion of bitter almonds, aqua cerasorum, aqua amygdalæ amaræ, aqua lauro-cerasi, vegetable extracts.

Hydrargyri cyanidum—Chlorine water, salts of iron, salts of copper, salts silver.

Hydrargyri oxidum—Acids, alkalies, chlorine water, infusion of bitter almonds, bitter almonds in emulsion, bromide of ammonium, ferrous iron salts, chloride of ammonium, substances containing sulphur.

Iodum, Iodine—Water of ammonia, starch, powders containing starch, metallic salts, fatty oils (*), ethereal oils (*), emulsions, hydrate of chloral, carbonates of alkaline earths, gum arabic, tragacanth, salep, hyposulphite of sodium, unguentum kalii iodati of the Ph. Germ. (*), etc.

Kalium aceticum (Potassii acetat)—Should not be used in powders, pills, pastilles, etc., because it is strongly hygroscopic.

Kalium chloricum (Potassii chloras)—Mineral acids, organic substances, sulphur, carbon, calomel, etc.

Kalium iodatum (Potassii iodidum)—Acids, acid salts, alkaloidal salts, nitrate of silver, salts of iron, lead, or mercury, chloride of lime, chlorine water.

Kalium permanganicum (Potassii permanganas)—Organic substances, ethereal oils, alcohol, glycerin, ammonia and salts of ammonium, sulphur, carbon, etc.

Morphine, Salts of morphine—Oxides

of iron, salts of iron, salts of manganese, salts of silver.

Liquor aluminii acetatis—Acids, alkalies, carbonates of alkalies, salts of potassium.

Liquor ferri oxychlorati (Dialyzed iron)—Acids, acid salts, substances containing tannin.

Mangani sulphas—The same as *Ferri sulphas*.

Moschus—Acids, acid substances, acetates, tannin, ergot, metallic salts.

Natrium bicarbonicum (Sodii bicarbonas)—Acids, acid salts, tannin, substances containing tannin, metallic salts, alkaloidal salts.

Natrium bromatum (Sodii Bromidum)—Mineral acids, chlorine water, salts of mercury.

Natrium Iodatum (Sodii Iodidum)—The same as *Kalium Iodatum*.

Natrium Salicylicum (Sodii Salicylas)—The same as *Acidum Salicylicum*.

Opium, Tinctura Opii, Extractum Opii—Alkalies and their carbonates, metallic salts (*), tannin and substances containing tannin, iodine, chlorine water, nux vomica (*), belladonna (*). [The two latter are mentioned here because they are or may be physiologically incompatible.—ED. AM. DR.]

Pepsinum—Alcohol, tinctures.

Plumbi Acetas, Sugar of Lead, Liquor Plumbi subacetatis, Subacetate of Lead—Gum arabic, emulsion of quince, tragacanth, opium, lime-water, carbonates, chloride of ammonium, sulphates (*), sulphuric acid, hydrochloric acid, iodide of potassium, iodine, tannin, and substances containing tannin (*).

Physostigmine (Salicylate)—Substances containing tannin, salts of iron, salts of mercury.

Stibii Chlorati Liquor (Antimonii Chloridum), Butter of Antimony—Watery liquids, alkaline substances.

Stibium sulphuratum aurantiacum, Antimonium sulphuratum (Golden Sulphuret of Antimony)—Liquor ammonii anisatus, bicarbonate of sodium, bitartrate of potassium, calomel (*), subnitrate of bismuth.

Stibium sulphuratum rubrum (Antimonii Oxysulphuretum, U. S. Ph., 1870), Kermes Mineral—Same as for the preceding.

Tartarus stibiatus (Antimonii et Potassii Tartras), Tartar emetic—Acids, alkaline substances, soap, calomel, substances containing tannin, rhubarb, cinchona, gum arabic (*), opium (*).

Vitellus Ovi (yolk of egg)—As given for albumen.

DANGEROUS COMPOUNDS OF DRUGS.

[A detailed report on Explosive Bodies and Mixtures has been given by one of us in *NEW REM.*, 1878, pp. 165, 196. This paper comprised probably the whole of the previously recorded experience on the subject. The present chapter contains nothing particularly new, but the subject is one which cannot be treated of too often, to judge from the frequent accidents occurring through neglect of necessary precautions, in consequence either of the ignorance or the carelessness of dispensers.—ED. AM. DR.]

Under this head are classed mixtures of such drugs as undergo a change either during the process of preparation, or at a longer or shorter time thereafter, in consequence of which they either explode violently, become incandescent, burst into flame, or are decomposed with the appearance of fire. Such mixtures are dangerous to the dispenser and the dispensing establishment, and also to the patient and his surroundings.

Chlorate of Potassium; Chlorate of Sodium.—Even small portions of these salts, with SULPHUR, CARBON, IODINE, POWDERS OF METALS, such as reduced iron, ORGANIC SUBSTANCES, organic acids, such as SALICYLIC ACID, CAR-

*The basis of this series of papers is the last edition of Hager's "Technik der Pharmaceutischen Receptur." The editors have, however, found it desirable to omit certain portions which relate to matters of practice peculiar to Germany and to insert others which are more characteristic of American customs. Editorial additions are inclosed in []. The use of the original text has been kindly granted by Dr. Hager.

BOLIC acid. and, furthermore, **STARCH**, **SUGAR**, or specially oxidizable substances, may produce frightful explosions, either by being rubbed in a mortar, or through a blow, pressure, or slight heating. The chlorate, when ordered in the shape of powder, must always be triturated by itself in a porcelain mortar. The mixing of the powder with oxidizable substances is done on a sheet of paper with the plume of a feather. The mixture must be poured out of the paper carefully (without the help of a spoon), and at a distance from a burning light, into a paste board box or paper bag. For fluid mixtures, the chlorate of potash should be dissolved by itself in water, and then the other ingredients mixed in with it. But even such watery mixtures may explode by exposure to a slight heat (for example, in the pocket, by the heat of the body). A mixture of a solution of chlorate of potassium with glycerin is always dangerous. If chlorate of potassium is to be dispensed in a mixture, it should always be considered whether there is danger in preparing it. Some inexperienced physicians attempt to combine **GLYCERIN**, **ALCOHOL**, **CARBOLIC ACID**, **SALICYLIC ACID**, **OIL OF THYME**, and other anti-diphtheritics, with chlorate of potassium. Unless much water enters into the mixture, it is to be avoided [or steps should be taken to notify the prescriber]. The apothecary makes the mixture, the messenger puts it in his pocket, and the slight degree of heat is enough to cause an explosion.

CHLORATE OF SODIUM acts in the same manner as chlorate of potash.

Iodate of potassium, which has also occasionally been used in medicine, demands the same caution as chlorate of potassium.

Pernanganate of Potassium.—Concentrated aqueous solutions of permanganate of potassium are decomposed by admixture with organic substances of all kinds (also with glycerin, alcohol, extracts, ethereal oils, syrups), furthermore with sulphur and substances containing sulphur, and with all organic acids, such as citric acid, carbolic acid, salicylic acid, etc., or with the salts of these acids, with attendant explosion. The mixture of dry permanganate of potassium with sulphur, organic substances, and above all, with oxidizable materials, may be followed by a dangerous explosion, accompanied by fire, so that the person who is preparing the mixture may lose his eyes, hands or fingers. Prescriptions of this sort should be rejected. Permanganate of potassium should be dispensed by itself alone, in watery solution, or in powder, or in the form of pills, with white bole [or vaseline and kaolin, etc.].

Iodine.—The solution of iodine in, or the admixture of tincture of iodine to fluids, which contain free ammonia in large quantity, causes the formation of the so-called iodide of nitrogen, a substance that becomes highly explosive under pressure or by heat. Iodine in ammoniacal liniments, with ammoniacal combinations (Hydrargyrum ammoniatum), should never be dispensed in salves, since the formation of iodide of nitrogen is always to be expected. Mixtures of iodine with ethereal oils may also result in explosion or flame. **BROMINE** behaves in a manner somewhat similar to iodine.

Chloride of Lime.—Mixtures of chloride of lime and sulphur explode sometime after being made. Chloride of lime also forms mixtures with certain organic substances, such as glycerin, ethereal oils, etc., which often do not explode or take fire at once, but this result follows after a time. If sulphur forms part of the mixture, an explosion or ignition is certain. Combinations of chloride of lime with chloride of ammonium, sulphur, gly-

cerin, fats, or ointments, are always dangerous. The therapeutic object, the operation of the chlorine, is annihilated by its contact with the organic matter, and, consequently, the mixture is entirely useless; the mixture of chloride of lime with chloride of ammonium is especially dangerous, since the formation of the explosive chloride of nitrogen is the usual result.

Hypophosphite of calcium, potassium, or sodium, or any other hypophosphite must never be mixed with chlorate of potassium or of sodium, iodate of potassium, permanganate of potassium, or chloride of lime. A pharmacist who prepared a pill-mass from 2.5 calc. hypophosphorus, 4.0 kalium chloricum, and 0.3 ferrum lacticum, was so injured by the attendant explosion and outburst of fire that he was confined to his bed for two weeks.

Oxide of Silver must be moistened with water before being mixed with oxidizable or organic substances. This precaution does not always prevent an explosion taking place later in the pocket of the patient.

Chromic Acid, also **Bichromate of Potassium** [and other bichromates], must be handled with special caution under certain circumstances. If, for example, the warm or hot solutions of the chromic combinations were mixed with glycerin, ethereal oils, or other organic substances, an explosion may happen, and the organic substances ignite readily, and if this should not take place at once, it may after a little time.

Picric Acid resembles chromic acid, and picric acid or picrates, such as picrate of potassium, etc., should never be mixed by dry trituration with organic substances, sulphur, iodine, etc.

Concentrated Sulphuric Acid. Mixtures of sulphuric acid and oil of turpentine are used in veterinary practice. Both fluids react on each other with unusual violence, but this reaction does not take place immediately, or at a lower temperature, but some time later, and is then sometimes accompanied by flame. When this takes place in a closed flask, a violent explosion will ensue. If some fatty oil (such as rape oil) is ordered in combination with the acid and the oil of turpentine—as is sometimes the case—the sulphuric acid is mixed with an equal volume of the fatty oil in an earthen vessel with diligent stirring. After the action of the acid on the oil (by disengagement of sulphurous acid) has terminated, small portions of the oil of turpentine are added at a time, and the mixture completed by stirring. The fluid having become cold, after standing for at least an hour, it is finally put into a flask and vigorously shaken up again, and set aside for a quarter of an hour before being corked up.

Spirit of Nitrous Ether, when mixed with tinctures or similar fluids, frequently causes a disengagement of gas, in consequence of which the bottle, if tightly corked, is burst, or else the cork is blown out and the effervescing fluid follows after it.

OPENING OF BOTTLES WITH GLASS-STOPPERS.

Although many fluids are of such a nature that the vessels in which they are kept should be closed with rubber-stoppers, yet, in deference to custom and show, glass-stoppers are generally used instead. If this is done, then the glass-stoppers ought to be *shortened*, so that, when the neck of a vial is three centimeters in length, only one centimeter should be completely filled by the glass-stopper, so that it can always be easily taken out. This is seldom thought of. The warning, therefore, is here given that *every glass-stopper which occasions frequent exertion and trouble for its removal should be shortened one-half*. The point at which it

is to be cut off is filed (the file being moistened with petroleum), and then firmly grasped with a pair of tongs exactly over the filed mark, and the part broken off by a vigorous blow with a hammer on the tongs. The rough edge of the broken place may be rounded off somewhat by filing, with the help of petroleum. Vessels containing caustic alkalies, soluble glass, etc., should be furnished with rubber-stoppers; or the part of the glass-stopper which fits into the neck may be coated with *paraffin ointment* or a mixture of *paraffin* and *vaseline*, which are neither dissolved nor acted upon by alkaline fluids. The simplest way of loosening a glass-stopper which cannot be removed by twisting or pulling is to light a kerosene lamp, put a narrow glass-chimney on it, and over this to heat the neck of the flask gradually, turning it on its axis, and trying from time to time whether the stopper is loosened. A bottle may almost always be opened in this manner. If the bottle contains volatile *inflammable* liquids, the manipulation over the lamp may be attended with danger. In this case, resort must be had to other means, such as knocking the stopper against a wooden surface, or striking the stopper on all its sides successively with some wooden implement. If there is no immediate necessity for opening the bottle, some liquid that will dissolve the cementing material may be poured, by means of a dropping-glass, into the groove between the stopper and the mouth of the bottle. If the vessel contains fluids which are dangerous if brought near the fire, the neck of the vessel may be placed in hot water for a couple of minutes. There is also a stopper extractor, made of wood, with which the top of the stopper is held fast, while the vessel is forcibly turned on its axis. This last contrivance is specially recommended for shelf bottles containing inflammable substances.

[To the preceding note taken from Dr. Hager's work, we append the following:

ADDITIONAL REMARKS ON EXTRACTING GLASS-STOPPERS.

The fixation of glass-stoppers in the necks of bottles may be due to several, very different causes. The principal ones of these are the following:

1. The stopper has been inserted at a moment when the neck of the bottle had a higher temperature than the stopper. In this case, the neck had a slightly wider diameter, so that when it cooled to the same temperature as the stopper, the latter was held with a force which may approach that of the breaking point of the glass.

2. The nature of the liquid contained in the bottle is such that it has attacked the surface of the glass, both on the stopper and on the neck, and has produced a sort of cement which unites them together.

The cause first mentioned is of the most frequent occurrence. Almost every case of a fixed stopper, which is not due to the second cause, or to some sticky substance accidentally confined between stopper and neck, is traceable to it.

It is annoying to be, as it were, pulled up short just at a busy moment, when a fresh bottle is to be opened, and the stopper refuses to yield. Many persons lose patience in such a case, get excited, employ either the wrong method or improperly apply what would have been the correct method, and fail in their attempt. That is, they generally manage to get at the contents of the bottle, but often at the sacrifice of the container, and, perhaps, some of the contents.

When an obstinate stopper is encountered, it is necessary to use circumspection, deliberation, and patience. Regard must be had in the

first place to the nature of the contents.

If the contents are *non-explosive*, *non-inflammable*, and *not caustic*, and the bottle and stopper are substantially made, so as to bear a moderate force, any of the following methods may be applied.

The stopper and neck are first thoroughly cleaned, so that when the bottle is opened, no dirt or foreign substance may fall into it. It is often necessary to insert the point of a pen-knife into the groove between the upper edge of the neck and stopper, to remove adhering cement or wax. At all events, as much of this as can be reached should be picked out. The bottle is now placed upon a solid wooden support, firmly grasped with one hand about the neck, and the thumb of the same hand pressed against one corner of the stopper. The other corner of the stopper is then struck, from the opposite side, a series of taps or blows with the wooden handle of a spatula or knife, until it becomes loosened. The wooden handle should contain no metallic parts, as these may accidentally come in contact with the glass stopper and shatter it. And the blows directed against the stopper must be so regulated that the thumb is pressed against the opposite corner at precisely the same moment, with about the same amount of pressure as the force of the blow amounts to. If the stopper has a slender neck, blows would be too much for it to stand. A series of rapidly repeated taps, with simultaneous bearing with the thumb against the other edge, will in most cases suffice.

If this method fails, it is well to try whether twisting or wrenching will not be able to remove the stopper. This may be accomplished either by using one of the well-known wooden stopper-wrenches, or by improvising such an article from any kind of tool or contrivance available. The handles of a pair of tongs, padded with a towel or cloth, will often answer. In using this method, some skill and considerable care are necessary. The bottle should be firmly grasped near the neck, and the wrench having been placed over the stopper, a firm but steady twisting motion should be used, proportionate to what may be judged suitable to the strength of the bottle. As there is always danger of twisting off the neck or upper part of the bottle, and the hand may be more or less seriously cut, it is advisable to wrap a towel around the glass where it is to be grasped by the hand. Instead of a steady twisting motion, some persons prefer to use a sudden wrench. If, however, the force employed is not nicely adjusted to the strength of the material, fracture will often result in this case. It must be remembered that glass will stand but little twisting and bending. Hence, if the direction of the forces employed in trying to twist the stopper and the bottle in opposite directions, is not in parallel planes, there will be an additional risk in breaking the bottle or stopper.

If either of the above methods fail, heat may be used. We are still assuming that we have to do with a *non-explosive*, *non-inflammable*, and *non-corrosive* liquid. In such cases, the application of heat, when properly performed, will almost always be successful. And if it should result in a fracture of the neck, no accident can result. There are several ways in which heat may be applied. We prefer an ordinary gas burner, giving a fish-tail flame, or a horizontal burner, such as are applied over billiard tables. The neck and stopper having previously been thoroughly cleaned, the neck of the bottle is held up against the thin edge of the flame, and rapidly rotated, being withdrawn every second or so, until it has become quite warm. Care must be taken not to

heat the stopper. The bottle is now set on the table and the stopper attempted to be removed by hand. If it will not start, further heat may be applied, and the operations repeated until it becomes loose.

Other methods of applying heat will be mentioned further on.

Sometimes a stopper may be loosened by inserting the bottle neck-down into water, oil of turpentine, benzine, or other liquids, which will gradually find their way upwards between the neck and the stopper, up to where actual contact of the glass takes place. This method is, however, uncertain, and is likely to be of use only when there is some substance confined between the neck and the stopper which is soluble in the liquids mentioned.

So far, we have assumed that we have to do with harmless liquids. It is, however, quite as common, if not more so, that the contents of such a hermetically sealed bottle are either highly volatile, or inflammable, or corrosive.

If the liquid is *corrosive* or *caustic*, great care must be exercised in applying any method requiring force. If a bottle of acid (for instance, one of the usual five-pint bottles of nitric acid) is to be opened, and the stopper is found to be obstinate, it is *always* best to make provisions against damage that might result from a breaking of the bottle. An experienced person will at once know, from the resistance some particular stopper offers, or from the apparent flimsiness or thinness of the glass of the bottle, that there may be some risk in such a case. He will, therefore, put the bottle in a place where it may do no harm should it break. We have ourselves experienced and been present at several accidents of this kind, and when we have to handle a doubtful bottle, place it on a thick sheet of rubber laid on the bottom of a flat-bottomed stone-jar of suitable capacity. We have several times had cause to congratulate ourselves at having done this.

Even when it is supposed unnecessary to adopt the precaution just mentioned, it is always advisable to wrap a towel around the whole bottle and the neck, and also to throw one fold of the towel over the stopper, before tapping or twisting the latter. Sometimes there is sufficient pressure of the confined air or gas to project some of the liquid in the form of spray or drops, and this may be thrown into the face or eyes of the operator. The towel will prevent such an accident.

This precaution is particularly necessary when opening bottles containing stronger water of ammonia.

If the liquid is *caustic* and strongly *alkaline*, and the stopper has once become fastened, it will generally be found impossible to remove it, as the glass of stopper and neck has been chemically cemented together. There is no other way but to break off the neck. Here it is also safest to place the bottle in a suitably sized stone-jar, and then to knock off the neck by a smart blow with a hammer. A string having been previously tied around the neck, and the end of the string being held in the hand, the broken-off portion can at once be removed.

If the liquid is *volatile* and *inflammable*, the safest plan is, under all circumstances, to loosen the stopper by tapping, a towel being wrapped around the bottle and a fold of it being thrown over the stopper. Bottles of this kind must be manipulated at a distance from lights or fires. It should not be forgotten that inflammable vapors, when ejected under pressure, may be ignited from a comparatively distant flame. Hence, particular care should be taken at night time in opening bottles containing ether and the like. Accidents have happened, not only through vapor, under pressure, being ejected against a burning light,

but also from the whole contents being spilled through fracture of the bottle, so as to produce an explosive mixture of vapor and air.

Sometimes the confined vapors are under a great pressure, dangerous to the operator. When *nitrite of amyl* had been introduced for a short time, one of us was in the habit of receiving supplies of this liquid in glass-stoppered pound bottles. Several of these had been opened without trouble, until one was encountered which obstinately refused to part with its stopper for some time. It was treated in the usual manner, by tapping the stopper, but no towel was thrown over it. Attention being for a moment directed elsewhere, while the tapping was mechanically continued, the stopper was suddenly loosened and projected with such force against the ceiling that it made a deep dent against it. A great volume of vapor was thrown out at the same time, seriously affecting the writer for a short time. But this was not all: in its flight towards the ceiling the glass-stopper grazed his forehead, cutting a gash into it. Had the stopper struck the face fairly, its force was sufficient to have done most serious injury.

When it is desired to heat the necks of bottles containing inflammable liquids, and an open flame is therefore inadmissible, hot water or friction may be used. The bottle should first be properly cooled, so that there may be as much difference as possible between the size of neck when cold and when hot. A thin rag, or the end of a towel is then wrapped around the neck and very hot water allowed to drain over it, care being taken that none of it touches the stopper. The latter should be frequently tried, and removed as soon as it is loose. The neck may also be heated by friction with a string passed several times about the neck. This may be preferable when it is feared that the hot water may cause a fracture of the bottle, and it is undesirable to have water mix with the contents.

When a fixed stopper has been loosened and removed, it should not be re-inserted into the neck of the bottle until this has become entirely cold again. Whenever admissible, the stopper should be coated with a very thin film of paraffin or vaseline.

Unfortunately, there are certain shapes of glass stoppers which are very liable to break when manipulated, or such as do not offer a sufficient hold to permit being firmly grasped. As an example of the former, may be mentioned the wide-mouthed glass-stoppered bottles in which Schering's or Saame's chloral hydrate is put up; and as an example of the latter, the pound bottles in which iodine is usually sold.

Neither of these, when stuck fast, can be loosened by tapping, without risk of breaking the stopper. They must be loosened by heat. Round or so-called mushroom stoppers can be loosened either by tapping or by heat only, as their shape does not admit the use of a wrench. If tapping with the wooden handle of a spatula is used, it is necessary to direct the blows from below upwards, an upward pressure with the finger or thumb being at the same time applied at the opposite part of the stopper.

Bottles containing *Bromine* often give much annoyance. It is unsafe, under all circumstances, to attempt the removal of fixed stoppers in large bromine bottles, except with proper precautions. Provision must be made that the current of bromine vapor, after the bottle is opened, do not pass over the operator, but away from him, and the bottles should be placed into a jar containing enough water to reach above the level of the within-contained bromine. Should the bottle break during the effort made to extract the stopper, the bromine will be covered

by a layer of water. Very serious, and even fatal, accidents have happened through failure, on the part of the operator, of observing such precautions. A bottle of dilute water of ammonia should also be within his reach, in case of his inhaling any of the vapor. The small bottles (1 oz.) of bromine often give more trouble than the large ones. After the cement has been removed from the neck, and the bottle has been freed from the label and thoroughly cleaned and washed, tapping the stopper may be attempted if it will not become loose without force. Frequently it will be found to be permanently fixed. The most simple way then will be to place the bottle in a mortar, fill the latter with water, and break the bottle with a pestle. The water being then nearly all poured off, the remainder may be poured into a separating funnel, or into a glass-stoppered burette, and the bromine drawn off for use.

A great deal more may be said or written about this subject. For the sake of the younger members of the profession we will append a few general rules which the experienced may often neglect without harm, but the observance of which will probably save many from injury.

1. Always assume that the liquid confined in the bottle *may* do harm if suddenly released.

2. If you do not know for certain that the contents are non-inflammable, treat the bottle as if the contents were inflammable. And in this case always have a sufficient quantity of *water* ready at hand to put out an incipient fire.

3. If the liquid is of an acid, alkaline, corrosive, or irritating nature, handle the bottle so that no damage can accrue to your person or the surroundings from a fracture of the bottle. Rather make the arrangements so that the contents may be saved. Have at hand proper antidotes when handling highly irritating substances. —ED. AM. DR.]

Australian Opium.

THE duty of 20s. per pound avoirdupois which is levied on all opium imported into Victoria tends to encourage the cultivation of the opium poppy, which was introduced into the colony many years ago, by Mr. Bosisto. In 1870, Mr. Bosisto published the results of his experimental opium farming, and since that time the experiments have gradually extended so that now it may fairly be said that opium farming is established, and the production of opium increasing. The poppy cultivated in Victoria is the white-flowered *Papaver somniferum*, var. *glabrum*. It grows exceedingly well, generally to a height of eight feet, and the capsules are of good size, about three inches being the extreme diameter. Samples of the capsules, in the Colonial and Indian Exhibition at present being held in London, are shown in the Victoria court. Three balls of the opium obtained from the poppy are also exhibited. The opium is of firm consistence, somewhat tenacious, and being quite free from insoluble matter, it is devoid of the granular appearance of Turkey opium. It is also somewhat lighter in color, and, when dried and powdered, is similar in color to powdered jalap. The odor of the drug is similar to that of the best samples of Turkey opium. It contains 12 per cent of moisture, and from the powder 11.5 per cent of morphia were obtained, so that it contains in the moist state 10 per cent of the alkaloid. If Victoria can produce an article so good as this, it is a pity that she should throw away a single sovereign on the imported article. It is hoped that ere long the need for the import duty will dis-

appear, and that other colonies will follow Victoria's example in producing what drugs they can.—After *Chem. and Drugg.*

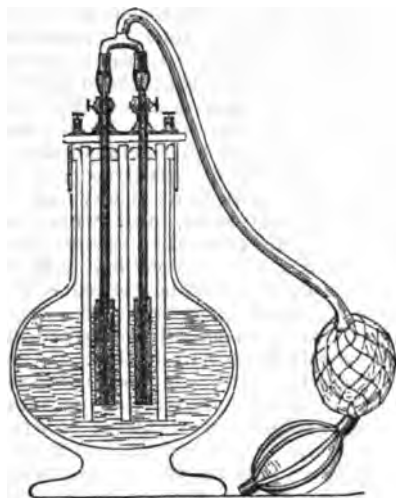
IMPROVEMENT IN BICHROMATE BATTERIES.

WHEN air is prevented from having access to the solution of chromic acid or bichromate of potassium in the Bunsen battery, it soon becomes inoperative or exhausted. To prevent this, E. M. Reiniger, of Erlangen, (Germ. pat., No. 35,487), proposes to employ hollow zinc electrodes, and to connect them with any kind of blowing apparatus or hand bellows, by means of which a current of air may be passed into the solution when required.

The Active Constituent of Senna.

R. STOCKMANN has re-examined the constitution of cathartic acid, the active principle of senna leaves, which Kubly reported to contain both nitrogen and sulphur. Stockmann finds that these last-named elements are not present, and that Kubly's results were due to an impurity contained in the substance examined by him.

The author confirms the statement that cathartic acid is the only active principle of senna.—*Arch. f. exp. Pathol.*, 19, 117.



Reiniger's improved battery.

New Morphine Reactions.

DR. J. DONATH announces (in *Journ. f. prakt. Chem.*, 1886, 564) that he has discovered two new characteristic reactions of morphine. One of these is based on Tattersall's reaction, by means of sulphuric acid and arseniate of potassium.

Finely powdered morphine (about 1 milligramme) is intimately triturated in a porcelain capsule with 8 drops of concentrated sulphuric acid, a small fragment of arseniate of potassium added, and again triturated. If the capsule be now heated by rotating it over a flame, until acid vapors begin to be given off, a handsome *bluish-violet* color is produced which becomes *dark brownish-red* on further heating. On cautiously diluting with water, a *reddish* tint is produced, which becomes *green* by further addition of water. If the fluid is poured into a test-tube, chloroform added, and the mixture agitated, the chloroform acquires a magnificent *violet* tint.

Ether is likewise colored reddish-violet, while the layer of liquid below it is brown.

The second reaction is obtained with sulphuric acid and potassium chlorate, and resembles the ferric chloride reaction (Vitali has employed the before-named reagents, but in a different manner).

A little morphine is triturated with about 8 drops of concentrated sulphuric acid, and 1 drop of a cold solution of 1 part of potassium chlorate in 50 parts of concentrated sulphuric acid

is added. The mixture then acquires a fine *grass-green* color, which lasts a long while. At the margin of the liquid, a faint *rose-red* tint is noticeable.

The author discovered these reactions while searching for some means of distinguishing between morphine and dehydromorphine, one of the products of the decomposition of morphine. For this purpose, the above two reactions are exceedingly distinctive. It remains to be seen, however, whether any other *natural* alkaloids will give similar results with the reagents.

The Cocaine Habit.

FROM a paper by Dr. A. Erlenmeyer, director of the Asylum for Nervous Diseases in Bendorf on the Rhine, published in the *Deutsche Medicinal Zeitung* (No. 44, of 1886), we translate the following abstract, after the *Pharm. Zeit.*

"The cocaine habit has been added to the alcohol and morphine habits as a worthy third scourge of humanity. Like the former, it afflicts every one who yields to it, with the most serious damages to body, mind, and morality.

"At present, we are only at the threshold of the development of this most recent morbid craze. But when I consider that the morphine habit required nearly ten years for its full development, while the cocaine habit has become firmly established after a single year subsequent to the discovery of the properties of cocaine, I have no doubt that we have here an enemy of tremendous power, which must be fought with knowledge, circumspection, and energy."

The author has collected observations upon 13 patients: 5 physicians, 2 wives of physicians, 3 army officers, 1 author, 1 landed proprietor, 1 official. The cocaine habit appeared in two forms. In one series of cases, only cocaine was taken; in the other, cocaine was combined with morphine. In every one of these cases, the use of cocaine could be traced back to the previous use of morphine, and the suggestion of its employment was derived from lay papers.*

The disease is developed in a very simple manner. The morphine eater either tries to cure himself with cocaine or is treated with it by some physician. In almost every case the plan fails. If the attempt to substitute the cocaine for the morphine succeeds, the patient has got rid of the morphine habit, but he has become a slave to cocaine. And if it does not succeed, he may require perhaps a somewhat smaller dose of morphine, but will have to use cocaine in addition.

When the cocaine habit becomes developed, it exerts a rapidly destructive influence upon mind and body.

Cocaine, like morphine, is usually taken hypodermically. Wherever it is injected, hard nodes, of the size of hazel-nuts, are formed in the cellular tissue, and these nodes persist for months.

Cocaine causes disturbances of respiration; it also causes excessive perspiration and fainting spells. For this reason, persons addicted to cocaine should never be anesthetized with chloroform.

With larger doses, a rapid falling away of the bodily weight is noticeable, amounting sometimes to 20 to 30 per cent in a few weeks. At the same time, it does not appear in such cases that they suffer from loss of appetite.

The whole appearance of a person addicted to cocaine is much worse than that of a slave to morphine.

*In the case of the physicians, and physicians' wives, it is more likely that the suggestion arose from articles contained in the professional press.—*Ed. AM. DR.*

The author mentions as further symptoms, more of a psychical character, the following: sleeplessness, mental derangement (of various degrees and kinds), gradual loss of memory, abnormal prolixity in conversation, correspondence, etc.

According to the author, alcohol used in excess is the only other substance that can produce as deep a destruction as cocaine.

Kola and Kola Paste.

For some time past, an article has appeared on the market, under the name Kola Paste, which promises to be useful as a source of caffeine, or, at least, to serve as a substitute for other substances containing caffeine.

Thomas Christy, in his "New Commercial Plants and Drugs" (No. 8, p. 6), was the first to draw attention to this paste. He says:

"I now have to record one of the most important discoveries that has yet been made with the nut of *Sterculia acuminata*, i. e., that these nuts can be prepared by a special process, and made into a paste that could not be distinguished from fine cocoa paste (made from *Theobroma Cacao*). This paste has been tested in this country [England] in many ways, and the results are worth mentioning." (See *AMER. DRUGG.*, 1885, 133).*

We have been favored by Messrs. Lloyd Brothers, of Cincinnati, with a sample of the paste, such as it has been supplied to the Smithsonian Institution and to the Surgeon-General of the Navy. It is not known how it is prepared, but it is stated by the agents to be a perfectly pure article, without any admixture, and believed to be "only a product of fermentation."

The physiological effects attributed to the drug at its habitat are similar to those ascribed to cocoa: "Its use is said to enable the natives of the west coast to endure prolonged exertion upon a mere modicum of food, while the whites living among them believe they escape the deleterious influence of the climate by chewing a small quantity before their meals. The negroes themselves consider it a sure prophylactic against dysentery. Among the men on the estates and in the garrison towns of west African settlements, Kola has the apparently well-founded reputation of dissipating the effects of an alcoholic debauch. From what is now known of its therapeutic properties, it is undoubtedly true that it does overcome the stupefaction and confusion of intellect which follows drunkenness. It is even maintained that it destroys the appetite for alcoholic drinks, and that after the use of the Kola cure a drunkard cannot return to his cups for some days without being nauseated. Finally, the natives believe it to possess aphrodisiac powers."† The esteem (almost veneration) in which these tribes held it attracted the attention of the naval surgeons, and they employed it in chronic diarrhoeas of hot climates with success; also in cardiac affections and in the cachexia. Thus it evidently came to the attention of the Surgeon-General of the United States Navy, who supplied it to several medical officers, and the subsequent reports of these gentlemen are of such a nature as to direct the careful attention of American physicians to Kola paste.

According to Medical Director Gihon and Medical Inspector Hudson, of the U. S. Navy, the drug appears to be serviceable in certain forms of nervous affections accompanied with painful headache. Dr. Hudson administered it like chocolate, from 7 to 10 Gm. (105 to 150 grains) of the paste

being grated finely, and boiled in a teacupful of milk, with subsequent addition of sugar. It was generally given only once a day.

Messrs. Lloyd Brothers give the following directions:

DIRECTIONS FOR USE.—Mix the prepared Kola paste with sugar, if not sweet enough, then add milk or water, boil, and stir well. This produces "a rather pleasant beverage," which should be drank hot, like chocolate, stirring well before administration. Take twice a day, once about two hours after breakfast, and again in the middle of the afternoon.

DOSE.—From one to four drachms at a dose is an average, although circumstances may demand an increase or a decrease of the amount.

Kola has already been used, in an experimental way, as a source of caffeine, and it is expected that its cultivation and export will form an important object of African settlers in the future. The shrub is already widely distributed in other countries, as will be seen from statements to be given below.

In view of the interest attaching to the subject of kola, we append portions of an abstract of a report made by Heckel and Schlagdenhauffen, which has appeared in the *Pharm. Jour.*

"Among the vegetable products of the African soil, there are perhaps none more interesting and valuable than those which under the various names of 'kola,' 'gourou,' 'ombene,' 'mangue,' and 'kokkorokou,' are used as articles of consumption throughout tropical and equatorial Africa, as equivalent to tea, coffee, maté, and cocoa. Used under the form of seeds, probably from time immemorial, by the native tribes, these products are of varying botanic origin, and their history has been up to the present time imperfectly known; but the authors have been able to avail themselves of the observations of some recent travellers to clear up some obscure points.

"The products which are included by the authors under the name 'kola' (the various synonyms quoted being special to particular countries), consist of seeds, yielded by two families of plants and differing very much in appearance. The kind most widely distributed, the true kola, which by some of the natives is called the 'female kola,' comes from the *Sterculiaceae*; another variety, called by the authors 'false kola,' is known among the negroes as simply 'kola,' or 'male kola.' Before the author's researches, only the 'true' or 'female' kola was known, and it had been ascertained to be yielded by the *Sterculia acuminata* P. de Beauv. (*Cola acuminata* R. Br.). To this, Messrs. Heckel and Schlagdenhauffen are able now to add information concerning the 'male' kola, hitherto unknown, and to give reasons for believing that various other species of *Sterculia*, besides *S. acuminata*, yield kola seeds.

"Dealing first with 'female' kola, the authors describe at length *Sterculia acuminata* from specimens, the description agreeing with Oliver's description of Var. a ('Fl. Trop. Af.', i., 220). According to the best information, the tree—which is from thirty to sixty feet high, and in general aspect resembles the chestnut—grows wild upon the western coast of Africa, comprised between Sierra Leone and the Congo, or Lower Guinea, reaching into the interior about five or six hundred miles, where it appears to follow the limits of the palm. Upon the eastern coast it appears to be unknown in places where it has not been introduced by the English. Dr. Schweinfurth, speaking of the country of Nyamnyams, near lake Nyanza, says that among the imposing forms of vegetation a *Sterculia* of the kola kind predominates, and is called locally 'kokkorokou.' In the country of the Mom-

boutous, too (24° E. long., 3° N. lat.), upon asking for kola he was supplied with the fruit in its rose-colored envelope; but the only information he could obtain there concerning it was, that the nuts were found in the country in the wild state, and were called nangoné by the natives, who chewed slices of it whilst smoking. Karsten, in his *Flora of Columbia*, describes the plant as growing wild in the moist hot woods near the southern coast of Venezuela, but the authors believe that it was probably introduced there about the same time it was introduced into Martinique, and that it was sown by African negroes, who brought it into those countries in the same manner as they are known to have introduced *S. cordifolia*, for the sake of its delicious fruit. It has also been introduced successfully by the English into the East Indies, the Seychelles, Ceylon, Demerara, Dominica, Mauritius, Sydney and Zanzibar, and by the French recently at Guadeloupe, Cayenne, Cochin China, and the Gaboon. In all these stations the kola tree flourishes best in moist lands at the sea level, or a little above. At Sierra Leone some fine trees are found at an elevation of 200 or 300 meters, but not higher than that.

"The kola tree commences to yield a crop about its fourth or fifth year, but it is not until about its tenth year that it is in full bearing. A single tree will then yield an average of 120 pounds of seed annually.

"The collection is conducted with great care and is made by women. The seeds are removed from the husk and freed from the episperm. In order to maintain their value among negroes, it is necessary to keep them in a fit state and in good condition. They are, therefore, carefully picked over, all damaged and worm-eaten seeds being removed, and the sound seeds are then placed in large baskets, made of bark and lined with 'bal' leaves (*Sterculia acuminata*, or *S. heterophylla* Beauv.)* the seeds are heaped up and then covered over with more 'bal' leaves which, by their thickness, resistance, and dimensions, contribute not a little to the preservation of the seeds by keeping them from contact with dry air. Packed in this manner, the seeds can be transported considerable distances, remaining free from mould for about a month, during which time it is not necessary to submit them to any treatment in order to preserve them fresh beyond keeping the 'bal' leaves moist. But if it be desired to keep them beyond that time, the operations of picking and repacking have to be repeated about every thirty days; the seeds being washed in fresh water and fresh 'bal' leaves placed in the baskets. The baskets usually contain about three cwts. of seeds. It is in this condition that 'Kola' is sent into Gambia and Goree, where the principal dealings in the seeds are carried on. In Gambia they are sold in the fresh state to merchants travelling with caravans into the interior, who dry them in the sun and reduce them to a fine powder, which is used, mixed with milk and honey, by the tribes of the interior to make a very agreeable, stimulating, and nourishing beverage. It most frequently arrives at Sokota and Kouka, in the Soudan, and Timbuctoo, where large sales of the seeds are made, in the fresh condition; from the Soudan markets it is carried by caravans to Tripoli, and from Timbuctoo into Morocco. As might be expected, the value of the kola increases as it makes its way into the interior of Africa, and the authors state that some of the tribes furthest removed from the sea pay for the dry powder with an equal weight of gold dust. Kola plays an

* On Kola Nut, see our articles published in *NEW REM.*, 1881, 84, and *AM. DRUGG.*, 1885, 5, both of which are illustrated.
† Philadelphia Medical Times, Sup. cit.

* The leaves received in England wrapped around kola nuts appear to belong to some *Dipterocarpus* tree.—T. C.

important part in the social life of many of the African tribes. An interchange of white kola between two chiefs is indicative of friendship and peace, while the sending of red kola is an act of defiance. An offer of marriage is accompanied by a present of white kola for the mother of the lady; the return of white kola is equivalent to acceptance of the suit, whilst red means rejection. The absence of a supply of kola from among the marriage presents would endanger the whole arrangement. All the oaths are administered in the presence of kola seeds; the negro stretches out his hand over them whilst he swears, and eats them afterwards.

"Concerning the 'male kola' or 'bitter kola,' as before stated, nothing definite was known, and as recently as the year 1882 it was referred erroneously to a species of *Sterculia*. In the Flora of Tropical Africa, Oliver says: 'The bitter kola of Fernando-Po is the product of trees belonging to the Guttiferæ. The authors were led by this remark to attempt to obtain from various parts of the eastern coast specimens of the plant yielding "bitter kola," and although the flowers did not reach them, they received specimens of the branches, leaves, and fruits, together with a sufficient quantity of seeds to allow of a complete analysis being made. All the specimens received from various places correspond in their characters, and showed that the bitter kola is the product of a single Guttiferous species, and not of several. From the material at their disposal the authors refer it to a new species, *Garcinia Kola* Heckel.'

"In its known characters, the plant would appear to be closely allied to *Garcinia Morella*, which, however, is essentially an Asiatic species."

On Njimo Wood.

LAST year a considerable quantity of wood was imported into Germany from the country beyond the Cameroons, under the name "njimo wood," with the statement that it had digestive properties similar to pepsin. It occurred in pieces of stem wood, sparsely covered with bark, and in thick sections of a cylindrical root uniformly covered with bark. The inner parts of the root pieces, as well as the wood itself, were of a beautiful yellow color, in some places intensified to reddish. Seen through a lens the stem wood and root seemed permeated with numberless round pores, containing a yellow resin that was colored brown by soda solution. The wood was easily reduced to a coarse powder with a rasp, and had a peculiar and agreeable odor, resembling musk.

Nothing was known as to its botanical origin. With a view to test its alleged digestive properties, Dr. Schulz prepared an aqueous extract by digestion in 10 parts of water on a water-bath, and another with cold water; both, however, proved incapable, either with or without the addition of hydrochloric acid, of exercising any digestive effect upon albumen (*Pharm. Zeit.*, June 12th, p. 350). An alcoholic tincture of the wood proved equally powerless, and a resinous extract obtained by its evaporation when injected subcutaneously into a frog produced no special effect. The extract, like the wood when chewed, had a strong, pure, bitter taste, and the peculiar smell of the wood. The alcoholic tincture differed from the aqueous preparation in presenting a remarkably beautiful fluorescence. In transmitted light the tincture was of a beautiful yellow color, but in reflected light it presented a sheeny green with the peculiar velvety tone of uranium glass. A more concentrated uranium, made with absolute alcohol, was of a beautiful dark-red yellow color with

the green fluorescence. The alcoholic tincture gave no alkaloidal reaction with potassium iodo-iodide solution.—*Pharm. Journ.*, June 26th.

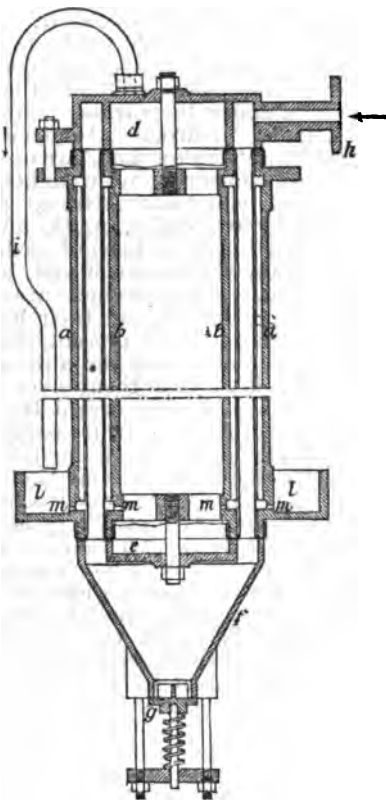
Kaolin as an Excipient for Oxidizing Substances.

SOME time ago, Mr. Martindale recommended, as the most suitable excipient for permanganate of potassium and other oxidizing substances, the following mixture:

Vaseline..... 8 parts.
Paraffin..... 1 part.
Kaolin..... 8 parts.

Three grains of this mixture were directed to be used for every pill containing 2 grains of the permanganate. As a further precaution, these pills are to be coated with a solution of sandarac in absolute alcohol.

Recently Mr. Geo. Smith, F.C.S., examined a number of these pills which had been made some 17 months before, and it was found that if they were reduced to powder, with the coating, and the permanganate estimated, the result showed an amount of reduction equivalent to 70 per cent. If the san-



Wagner's continuous filter press.

darac coating was previously scraped off, the reduction amounted to only 47 per cent. Therefore, the sandarac coating brought into intimate contact with the permanganate caused a loss of 23%. It was therefore considered desirable to pursue the investigation further on a pill-mass *per se* made according to the above formula. The best white vaseline and washed kaolin were used in preparing the excipient, and the pills were allowed to remain about nine months before being examined. The pills were found to contain 77.82 per cent of unreduced permanganate, which is regarded by Mr. Smith as a proof that Mr. Martindale's excipient practically answers the purpose, provided only the minimum amount of excipient is taken.

The author has also examined the applicability of the excipient to pills containing gold or silver salts, and he pronounces it as perfect, at least so far as nitrate of silver is concerned. In the case of chloride of gold and chloride of gold and sodium it was not satisfactory.

The author thinks that the excipient can probably be improved by raising the purity of the ingredients. That

which he has used in his own experiments was prepared from

White Vaseline..... 8 parts.
Best White Paraffin..... 1 part.
Washed Kaolin..... 8 parts.

—After *Pharm. Journ.*, May 15th.

[*Note of Ed. Amer. Drugg.*—It seems to us that the resistance to oxidation, in the ingredients above mentioned, could be greatly increased by treating them, previously, with a sufficient quantity of permanganate of potassium until this salt is no longer affected. The vaseline and paraffin might be melted together in a flask containing boiling distilled water, strongly acidulated with sulphuric acid, and enough permanganate might then be added, in small portions at a time, until, after protracted boiling, the tint of the liquid remained unaltered. The watery liquid could then be poured off, and the remaining mixture washed with pure distilled water until all trace of acid was removed. The kaolin could be easily purified separately, in the same manner. Finally, the three ingredients, thus freed from most or all impurities exercising a reducing action might be mixed together and kept, in a securely covered vessel, for use.]

A CONTINUOUS FILTER-PRESS.

IN order to avoid the great loss of time involved in emptying and recharging the ordinary filter-presses, E. Wagner, of Freiburg, Baden, has designed a circular filter-press, which can work continuously.

Two cylinders, *a* and *b*, are placed within each other. They are provided with longitudinal grooves, and covered with filtering cloth of suitable strength. For this purpose, the inner cylinder may be taken out. The two cylinders are kept in their position by a common cover *d*, in such a manner that a circular space remains empty between the two cylinders. The inner cylinder *b* is closed at its other end by the cover *e*, and the external cylinder by the funnel-shaped expansion *f*, provided with a compression vent *g*. The covers *d* and *e*, and the funnel *f* at the same time serve to hold in place the edges of the filter cloths.

The magma which is to be pressed is forced into the space between the cylinders, through the joint *h*. In passing down it yields up its liquid, by continuous pressure, and the liquid passes into the grooves behind the cloth, and from there through the openings *m*, both in the outer and inner cylinder.

That which comes directly from the outer cylinder passes at once into the circular reservoir *l*; the contents of the inner cylinder find their way there through the tube *i*.—*Dingl. Polyt. Journ.*, 260, 317.

Oleum Hyoscyami.

As a supplement to the note on oleocota, and particularly oleum hyoscyami, contained on page 107 of our June number, we take the following from the *Pharm. Zeit.* (No. 28).

"An oleum hyoscyami of a handsome green color may be obtained by heating the oil with the herb in brass (not copper) vessels. As this oil is only used externally, and copper is often used externally for various purposes by physicians, the small percentage of copper in the oil will not be objectionable."

Note.—As the formula given in our June number produces a handsome product, without having recourse to a subterfuge, the propriety of which is more than doubtful, we cannot indorse the above proposition. Rather accustom the public and the prescriber gradually to a less handsomely tinted product than put in their hands a "make-believe."—ED. AM. DR.

Carl Wilhelm Scheele.

[Born at Stralsund, December 19th (or 9th?). 1742. Died at Köping, May 21st, 1786.]

THE centenary of the death of this pioneer on the field of chemical research has been worthily commemorated by a memorial paper from the pen of Prof. F. A. Flückiger, in the *Archiv der Pharmacie*. The memorial is accompanied by a lithographed portrait of Scheele, derived from a woodcut accompanying his biography published some twelve years ago in the Swedish "Familjejournal."* Every existing portrait of Scheele, with the exception of perhaps one, has been ascertained to have been sketched after his death, from memory. The exception is a portrait painted upon ivory, at present in the possession of a Berlin painter, Mr. Brüggemann. It represents him as a young man, but the features differ somewhat from those shown in the accompanying portrait. The search after an authentic portrait of Scheele has become an important matter, as it is to be used in modelling his features for a statue to be erected in Stockholm.

Carl Wilhelm Scheele was born on December 19th (perhaps 9th), 1742, at Stralsund, being the seventh child of Johann Christian Scheele, grain dealer and brewer, and his wife, whose maiden name was Margaretha Eleonore Warnekros. His father was not successful in his business undertakings, and Carl Wilhelm, therefore, did not enjoy superior advantages of education. After having passed through a private school, and having been taught by professional friends of his parents the art of deciphering or reading prescriptions and the meaning of chemical and pharmaceutical signs, a friend of the family, Bauch, apothecary at Gothenburg, took him as apprentice (1757). He was soon relieved from purely mechanical work and transferred to the laboratory, where he exhibited great zeal and diligence, not being satisfied with the routine work itself, but meditating and speculating on the theory of the processes. At this time he read the works of Lémery, Neumann, Runckel, and Stahl, the latter of whom had been the principal champion of the phlogiston theory. Though his writings, at that time, were no longer new, they must have exerted a great influence upon Scheele, as would appear from theoretical speculations of the latter which are mostly based on those of Stahl. It is reported that Scheele experimented much during the night; even a reprimand which was once administered to him on account of an explosion was unable to cool off his ardor. After his apprenticeship of six years was completed, he remained two further years with his preceptor, and in 1765 took service under C. M. Kjellström, apothecary at Malmo, a progressive and well-informed man. Here he made the acquaintance of the learned A. J. Retzius (1742-1821), who was then "docent" at the University of Lund, and subsequently became professor of natural history and economy, later also of chemistry at Stockholm. After having revisited his native city Stralsund, he accepted an engagement with Stahrenberg, apothecary (at the sign of "The Raven"), at Stockholm. This was either in 1767, or '68, or '69. Being now in the capital, it was more easy for Scheele to make suitable acquaintances. Though his time was much taken up with his duties at the

prescription counter, he nevertheless found leisure for study. It was at this period that he discovered tartaric acid. He also studied, in conjunction with his friend Retzius, the relation of quicklime towards calcium carbonate. On August 17th, 1768, his paper entitled "Chemical Results on Sal Acetosellæ" was read in the academy, but it was put aside on November 9th, after Bergman had declared that it contained nothing new.

While in Stockholm, Scheele made the acquaintance of a number of learned men, among them Abraham Bäck, an intimate friend of Linné, president of the medical college, and physician to the king; Peter Jonas Bergius, author of an excellent materia medica; Bengt Bergius, the learned historian; Carl Friedreich von Schultzenheim, celebrated surgeon, and director-general of hospitals; and many others.

In the fall of 1770, Scheele accepted the direction of the laboratory of the great pharmacy of Locke, at Upsala, and here he soon had the good fortune to acquire the friendship of Thorbjörn Bergman, who had been appointed in 1767, rather unexpectedly, professor of chemistry, for which position he was eminently fitted by a most thorough preliminary training, which even comprised the mathematical sciences.



Carl Wilhelm Scheele.

Locke, whose laboratory supplied chemicals to Bergman, had noticed that saltpetre, when cautiously melted so as not to acquire an alkaline reaction, and then treated with acetic acid, gave out red vapors. Neither Bergman, nor his assistant Gahn could then give any explanation of this fact. Scheele, however, supposed it to be due to the formation of an acid, different from and weaker than nitric acid, having a relation to the latter similar to that which sulphurous acid has to sulphuric. When Bergman heard of this explanation he desired to form Scheele's acquaintance, which the latter at first conceded only with reluctance, remembering the report made on his paper on Sal Acetosellæ.

On July 27th, 1774, Scheele was proposed by Bergius as a Member of the Academy, and was elected on February 4th, 1775.

After having fairly made the acquaintance of Bergman, the most friendly relations were maintained between them, and Scheele had the free use of his laboratory. It is hard to say which of the two profited more from the other.

In 1775 he accepted for a short time the management of a pharmacy in Köping, and towards the end of 1776 or the beginning of 1777 established himself in business there.

On October 29th, 1777, he took his seat for the first (and only) time at a meeting of the Academy of Sciences, and on November 11th of the same year he passed the examination as apothecary before the Royal Medical College with the greatest honors. After his return to Köping, he devoted himself, outside of his business which consumed much of his time, to scientific researches, the fruits of which were laid down in a long series of important papers.

In the fall of 1785, Scheele began to be affected with an affliction, from the description of which it may be inferred that it was a disease of the kidneys. Some time during the beginning of the succeeding year, he also contracted a disease of the skin (pityriasis), which so enfeebled him, in connection with his other trouble, that he anticipated an early release from his sufferings. Three days before his death, he performed an act of generosity and magnanimity, characteristic of the time in which he lived, by marrying the widow of his predecessor, in order to insure her an undisputed title to his property. He departed this life on May 21st, 1786.

His brilliant discoveries and indefatigable zeal in research had procured him, during his short life, the acquaintance and friendship of the foremost scientists of his time, and had brought him many distinctions, in the shape of honorary membership in foreign learned societies. There has been no chemist living since his time who made so many important original discoveries as he.

It would exceed the limits of this sketch to discuss the contents of the several papers published by Scheele. For this we must refer the reader to Prof. Flückiger's memorial. We shall have to content ourselves with enumerating the titles of his papers, all published within fifteen years:

1. (1771) Fluospar and its Acid.—2. (1774) "Braunstein" or Magnesia [Manganese], two papers.—3. (1775) Benzoin Salt [Benzoic Acid].—4. Arsenic and its Acid.—5. Silica, Alumina, and Alum.—6. Urinary Calculi.—7. (1777) Chemical Treatise on Air and Fire.—8. (1778) Wet Process for Preparing Mercurius dulcis [Calomel]. 9. Simple Process for Preparing Pulvis Algarothi [oxychloride of antimony].—10. Molybdenum.—11. Preparation of a New Green Color.—12. (1779) On the Quantity of Pure Air daily present in the Atmosphere.—13. Decomposition of Neutral Salts by Lime or Iron.—14. Plumbago.—15. Heavy-spar.—16. (1780) Fluospar.—17. Milk and its Acid.—18. Acid of Milk-sugar.—19. On the Relationship of Bodies.—20. (1781) Tungsten.—21. The Combustible Substance in Crude Lime.—22. Preparation of White Lead.—23. (1782) Ether.—24. Preservation of Vinegar.—25. Coloring Matter in Berlin Blue.—26. (1783) Berlin Blue.—27. Peculiar Sweet Principle from Oils and Fats [Glycerin].—28. (1784) Attempt to Crystallize Lemon-juice.—29. Constituents of Rhubarb-earth [Calcium Oxalate] and Preparation of Acetosella Acid [Oxalic Acid].—30. The Coloring "Middle-salt" of "Blood-lye" [Yellow Prussiate of Potassium].—31. Air-acid [Carbonic Acid]; Benzoic Acid. Lapis infernalis.—32. Sweet Principle from Oils and Fats. Air-acid.—33. (1785) Acid of Fruits, especially of Raspberry.—34. Phosphate of Iron; and Pearl-salt.—35. Occurrence of Rhubarb-earth [see 29] in various Plants.—36. Preparation of Magnesia alba.—37. Fulminating Gold. Corn-oil [Fusel-oil]. Calomel.—38. Air-acid.—39. Lead-amalgam.—40. Vinegar-naphtha.—

* Prof. Flückiger has favored us with special copies of this lithograph, and we have caused it to be reproduced for our journal.

41. Lime. Ammonia or Volatile Alkali.—42. Malic Acid and Citric Acid.—43. Air, Fire, and Water.—44. (1786) The Essential Salt of Galls [Gallic Acid].—45 Nitric Acid.—46. Oxide of Lead. Fuming Sulphuric Acid.—47. Pyrophorus.—48. Peculiarities of Hydrofluoric Acid.

Behavior of Permanganate of Potassium towards Alkaloids.

SINCE it has been shown that permanganate of potassium is affected but slowly by pure cocaine, it has become a matter of interest to ascertain the behavior of this reagent towards other alkaloids. Prof. H. Beckurts, of Braunschweig, has made experiments in this direction, and the following is an abstract of the results obtained by him.

The tests were all made by adding to a saturated aqueous solution of the hydrochlorates of the several alkaloids a one-tenth-per-cent solution of the permanganate in drops.

Immediate reduction of the permanganate, with separation of brown manganic hydrate, took place in presence of quinine, cinchonidine, cinchonamine, cinchonine, brucine, veratrine, colchicine, coniine, nicotine, aconitine, physostigmine, codeine, and thebaine.

Solutions of the hydrochlorates of hyoscyamine, pilocarpine, berberine, piperine, strychnine, and atropine were colored at first red by the permanganate, and the latter was gradually reduced.

From solution of hydrochlorate of morphine, the permanganate separates a white crystalline precipitate of oxy-dimorphine, which, when filtered off and dried, may be recognized by its characteristic reactions.

Solution of hydrochlorate of apomorphine reduces the permanganate instantly, and acquires an intense dark-green color.

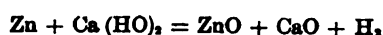
Narceine, *papaverine*, and *narcotine* exhibit a characteristic behavior similar to cocaine.

On adding to a concentrated solution of hydrochlorate of *narceine* a few drops of the permanganate solution, there is at once produced a precipitate having a reddish hue (like peach-blossoms). This precipitate is quite stable in absence of any excess of permanganate. If the latter is in excess, however, or if heat be applied, the precipitate is decomposed, and brown manganic hydrate separated.

In the same manner behave solutions of the hydrochlorate of *papaverine*, as well solutions of *narcotine* mixed with hydrochloric acid. Yet the resulting permanganates are much less stable than the corresponding salt of *narceine*. The precipitates rapidly lose their fine tint, and brown manganic hydrate makes its appearance.

New Method of Generating Hydrogen and Carbonic Oxide.

If zinc-dust is mixed with calcium hydrate, obtained by moistening quicklime with a little water, sifting and drying at 100° C. (212° F.), and the mixture heated in a suitable furnace, so that the heat progresses uniformly from the remotest portion of the furnace outwards, a regular evolution of hydrogen gas takes place (according to H. Schwarz, in *Ber. d. D. Chem. Ges.*, 1886, 1140). The reaction which takes place is the following:



If zinc-dust is mixed with an equivalent quantity (1 mol.) of carbonate of calcium, and the mixture treated as above, carbonic oxide is produced.



QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,745.—Tablet Composition (B. and B.).

On page 73 of the advertisement columns of our issue for October, 1885, there appears a formula for a tablet composition, to be made from 1 part of sugar, 1 part of linseed oil, 4 parts of glycerin, 8 parts of glue, and a little aniline dye. It is directed to "cover the glue and gelatin with water." This should read: "glue or gelatin." Gelatin is merely a pure form of glue, and it might have been as well if we had written in the above formula: "8 parts of glue (or gelatin)."

No. 1,746.—Rendering Paper-Labels Waterproof (G. A.).

The label having been properly pasted on and dried, coat it first with a size prepared by adding as much alcohol to thick mucilage of gum arabic as this will stand without precipitating. When the sizing is dry, the label is brushed over with a solution of 50 parts of mastic and 1 part of storax in 165 parts of alcohol. In making the latter solution, it is recommended to add about 25 parts of sand, which mixes with the mastic and permits the alcohol to penetrate the mass more rapidly.

No. 1,747.—Perfuming Furs (Chic.).

This correspondent appears to be called upon to provide material, or, at least, to suggest ideas for perfuming furs, such as muffs, caps, tips, etc., and he asks us to give him a hint regarding the subject. He thinks that the object may be accomplished by placing some of the scented material between the lining. We believe ourselves that this would be the best method. The question would only be, in what shape the perfume should be used. It could not well be introduced in the form of an herb or a powder, as it would work its way through the lining some time or another. Perhaps a good plan would be to mix the perfume, in the shape of oils, with a solution of gutta-percha in chloroform: pour the solution upon strips of twilled muslin, or chamois leather, or flannel, etc., and to allow it to evaporate spontaneously. The dry strips will retain the odor of the oils for a long time. If they are not absolutely dry, they may be laid between layers of dry flannel or other material.

No. 1,748.—Copying Ink (J. McJ.).

The simplest way of making copying ink is to evaporate any writing ink, made with iron and of good quality, from ten volumes to six volumes, and then to bring it back to its original volume by the addition of glycerin.

Other methods are the following:

1. Add to any good black writing ink one-third of its weight of sugar.

2. Dissolve 1 part of sugar in just the necessary amount of water and add 3 parts of glycerin. Mix the solution with an equal volume of good black writing ink.

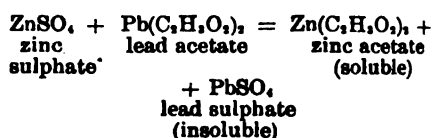
3. 10 oz. of extract of logwood are boiled with 1 pint each of water and vinegar. To the strained decoction are added 1 oz. of green sulphate of iron, 5 oz each of alum and gum arabic, and 10 oz. of sugar, and the whole raised again to boiling.

4. Boil 9 oz. of coarsely ground nut galls and 4½ oz. ground logwood with 12 pints of water down to 6 pints, and strain. Dissolve 4½ oz. of green sulphate of iron, 2½ oz. of sulphate of copper, 3½ oz. of gum arabic, and 1 oz. of sugar in 1½ pints of water; pour this

solution into the strained decoction previously obtained, stir well, set aside for 24 hours, and filter through flannel.

No. 1,749.—Prescription Query ("A reader").

We are aware that physicians sometimes order injections containing sulphate of zinc and acetate of lead. They are probably not aware that there is a mutual decomposition, resulting in the production of insoluble sulphate of lead, and a corresponding quantity of acetate of zinc. As long as there is any soluble sulphate present, no lead salt can remain in solution; and as long as there is any lead salt in solution, no soluble sulphate can remain undecomposed. Omitting the water of crystallization of the salts, the reaction is:



Acetate of lead and sulphate of morphine are also often prescribed. In all these cases the physician should use the acetate of both bases.

We know a few physicians, however, who intentionally order sulphate of zinc and acetate of lead, and who direct their patients to shake the bottle just before using the contents for injection. They are aware of the incompatibility, but believe that there is some benefit derived from the insoluble sulphate of lead remaining in contact with the inflamed mucous membrane (of the urethra).

No. 1,750.—"Condensed Beer" (E. S. J.).

The "Concentrated Produce Company, of London" [and Brooklyn?], which has acquired an undesirable reputation in connection with the so-called hopeine put on the market by it, manufactures a "Condensed Beer," which is highly lauded in advertisements as a superior dietary article, and is recommended to physicians, chiefly on account of its high percentage of extractive of hop, as a superior soporific.

This "Condensed Beer" has recently been analyzed by Dr. R. Sendtner, of Munich (*Rep. d. Anal. Chem.*, 1886, No. 24). It is alleged to be prepared by concentrating English ale in a vacuum-apparatus, and is claimed to contain 24.01% of alcohol and 42.22 of extractive matters.

The analysis proved conclusively—from the relative quantities of the non-volatile constituents—that the Condensed Beer could not have been produced by evaporating ale, but is without doubt manufactured from extract of malt, by diluting this with alcohol and water, and allowing the mixture to age a little so as to lose the sharp taste of alcohol, or else—which is the same thing—by concentrating beer-wort in vacuo, and subsequently adding alcohol. "Condensed Beer" was found by the same chemist (as well as by others) absolutely free from any alkaloids, thereby disproving another one of the claims of the company. It was, however, found to contain salicylic acid.

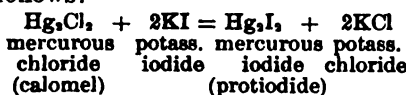
No. 1,751.—Reaction between Calomel and Chloride or Iodide of Potassium (O. W.).

Our correspondent asks: "Is calomel compatible with chlorides? So far as I am aware, it is incompatible with iodides. What are the changes produced? And how do bromides act when they come together with calomel?"

In answering these questions, we will begin with the iodide.

When calomel and iodide of potassium are triturated together, and when the calomel is in excess, there is a

transposition of constituents, and mercurous iodide and a chloride of the alkali are produced. The presence of the former is indicated by the greenish tint of the mass. It is quite probable that some biniodide is at the same time produced, and that some of it remains mixed with the protiodide, because it cannot be avoided that the calomel or the protiodide may come in contact at some portion of the mass during the trituration with an excess of the alkali iodide. The reaction which takes place, provided *only* the green iodide (mercurous iodide) is formed, is as follows:



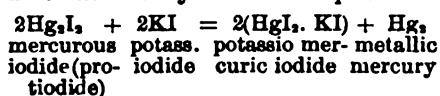
If the two substances are brought together in equivalent proportions, as demanded by this reaction, viz.:

470.2 parts of calomel, and
881.2 parts of iodide of potassium,

it might be supposed that the whole of each compound were transformed, as shown by the reaction, and that there was, in fact, no more calomel or iodide of potassium left undecomposed. This is, however, not proven, nor is it quite likely, to judge from analogous examples. It is probable that the mutual decomposition progresses to a certain point where there is an equilibrium established, so that actually at least four different compounds may be present in the triturated mixture. We have not time to follow this question up at present, but would suggest that our correspondent examine the subject himself. One reason why we surmise that the decomposition is not quite complete is this: that the mercurous iodide produced is, according to all accounts, a trifle more soluble in water than the mercurous chloride from which it was produced.

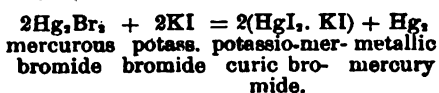
Leaving speculation aside, we will continue our explanation.

Whenever the alkali iodide is in excess, the calomel, or rather the mercurous iodide produced from the latter in the incipient stage of trituration, is further changed to metallic mercury and biniodide of mercury. Consequently, the comparatively innocuous calomel will be converted into an active poison, the medicinal dose of which is quite small compared with that of calomel. The reaction is as follows, supposing the first step, viz., the production of mercurous iodide has already been accomplished:



The potassio-mercuric iodide is a compound of iodide of potassium and mercuric iodide (biniodide of mercury) which dissolves in the excess of iodide of potassium present, upon the addition of water.

When bromide of potassium is substituted for the iodide, the same decompositions occur, the mercurous and mercuric bromides being produced, the latter of which is as poisonous as the biniodide. The final reaction will be:



In the case of chlorides of alkalies, the conversion of calomel into corrosive sublimate occurs under certain circumstances. A solution of chloride of ammonium, for instance, particularly when concentrated, produces the change with comparative rapidity, though the first stage of the change is probably always the production of a double salt, containing still the mercurous radical. Solutions of chlorides of sodium and potassium act much more slowly. A dry mixture of calomel and some chloride probably remains unal-

tered for a long time; the stability may be insured by the addition of certain salts, such as carbonate of calcium. It is not advisable, however, to trust to a mixture containing calomel, which has been kept for some time. When freshly prepared, the calomel is unaffected, or not noticeably altered, and it should be administered only in this condition.

No. 1,752.—Warburg's Tincture (C. J. M.).

The original formula of Warburg's tincture was published by us in New Rem., 1878, p. 248.

At the present time, the following formula is usually followed (the proportions being given in the U. S. weights and measures):

Aloes.....	224	grs.
Rhubarb.....	56	"
Angelica Seed.....	56	"
[Confection of Damocrates.....	56	"]
Elecampane.....	28	"
Saffron.....	28	"
Fennel.....	28	"
Prepared Chalk.....	28	"
Gentian.....	14	"
Zedoary.....	14	"
Cubeb.....	14	"
Myrrh.....	14	"
Camphor.....	14	"
White Agaric.....	14	"
Sulphate Quinine.....	150	"
Diluted Alcohol, enough to make	16	fl. oz.

Reduce the fibrous vegetable substances to a moderately coarse powder, add the aloes, myrrh, and camphor in small pieces, and digest the whole with the diluted alcohol in a well-covered vessel (or, better, in a flask provided with a return condenser) for twelve hours on a water-bath. Then add the sulphate of quinine, replace the vessel on the water-bath until the quinine is dissolved, and then set it aside to cool. Finally, add the chalk, mix thoroughly, and filter.

In place of the confection of Damocrates, which used to contain many ingredients now no longer obtainable, simple powdered opium may be used, if deemed necessary. The quantity of powdered opium equivalent to the 56 grs. of the confection of Damocrates is about 2 grains, and might probably be omitted altogether.

Some persons have a great aversion to aloes. In order to accommodate such, the tincture is also made without aloes.

Warburg's tincture is also often ordered to be evaporated to an extract, and the latter ordered to be dispensed in capsules. As it is rather wasteful to evaporate the tincture, which contains comparatively little solid matter in solution, it is better to prepare such an extract specially, and, as the extract may sometimes be required without aloes, it is preferable to leave this out, and to add it only when required, best in the form of aqueous extract of aloes, 16 oz. of which correspond about to 80 oz. of aloes.

No. 1,753.—Oil of Cedar (C. H.).

This subscriber says: "You will greatly oblige me by giving information as to the best and cheapest mode of manufacturing oil of cedar; also as to the parts used."

The original "cedar" is the well-known Biblical cedar of Lebanon (*Cedrus Libani* Barr.), which is a native of Syria. The wood of this tree has been renowned as a perfume from the most remote times. On distillation it yields an essential oil "which is very fragrant" (Piesse), and which is (or has been) used extensively for scenting "cold cream soap." Piesse states that this oil, the so-called otto of cedar-wood, has become very scarce. Yet we find it quoted in wholesale price-lists of the foremost manufacturers and dealers in essential oils at about \$1.25 per pound in wholesale packages. That this oil is no longer derived from

Lebanon cedar-wood is made evident by various circumstances, among others by the testimony of a very competent authority, namely, G. W. S. Piesse, in his "Art of Perfumery," where he says:

"Since the publication of the first edition of this work, otto of cedar-wood, which was very scarce, has been sent extensively into the market. Messrs. Piesse & Lubin have procured an average of 28 ounces from 112 pounds of shavings, being the refuse of the pencil-makers. The pencil-cedar is the 'Virginian' or American cedar, *Juniperus virginiana* L. The true cedar, *Cedrus Libani*, and from which the handkerchief perfume is 'named,' yields a very indifferent otto and odor to the American plant. The 'Cedars of Lebanon' are so familiar, however, that perfumers could not afford to change the title of the scent they make for [from?] the red wood of the West, though the latter is superior to the former in fragrance."

There is a contradiction regarding the fragrance of oil of Lebanon cedar between this passage and that quoted before from Piesse's work. The fact is, the two oils resemble each other very much, and any difference or preference of one over the other is probably due to care in distillation, as well as to proper selection of the most suitable portions of the wood. Hirzel (in *Toiletten-Chemie*) says:

"Ethereal oil of cedar was formerly very scarce; now it may be obtained in large quantities. The wood of the American or Virginian cedar, also called 'lead-pencil cedar,' which is used largely by lead-pencil makers, is very rich in essential oil, 1,000 kilos (1 ton) yielding on distillation 1,700 Gm. (about 3½ lbs.) of essential oil. The oil of the Virginian cedar does not differ much in odor from that of the Lebanon cedar; but all perfumes which bear the name 'Cedar of Lebanon' contain the oil of the American cedar, since the perfumers do not wish to alter the former name. The ethereal oil is prepared from the shavings and refuse of the lead-pencil works by distillation."

Considerable quantities of it are also obtained, as we learn from other sources, during the drying of the wood, and are collected by condensing the vapors escaping from the drying-rooms.

On the price-lists of wholesale dealers we also find "Oil of Florida Cedar," at about 90 cts. per lb. wholesale, and "Oil of American Cedar," at about 60 cts. per lb. The latter is said to be scarce, and often adulterated or substituted by common oil of turpentine. In just what way these two grades differ, whether they are obtained in a different manner, or whether one is a residue of the other, we are at present unable to say. At all events, our correspondent will have no difficulty in obtaining cedar-wood, either from lead-pencil works or from cigar-box manufacturers. The distillation, of course, is carried on as usual by distilling the wood with water, or passing steam through it.

It has also been reported that the essential oil obtained from the white cedar (*Cupressus thyoides* L.) has been sold as oil of cedar. (See Bailey in *Phil. Med. Rep.*, June 27th, 1872.)

No. 1,754.—Estimation of Carbolic Acid (U. S.).

Carbolic acid is best estimated by means of bromine, which converts it into tribromophenol:



The usual method is to add to the aqueous solution containing the carbolic acid freshly-prepared bromine water in slight excess, allowing the mixture to stand some time, collecting

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[ORIGINAL COMMUNICATION.]

AN EXPERIMENT WITH PEPPERMINT PLANTS.

BY ALBERT M. TODD.

THE experiment which I wish to record was made for the purpose of determining what effect, if any, was produced upon the nature and quantity of the essential oil of peppermint, when the plants had been perfectly dried and exposed for a long time to atmospheric action prior to distillation, as compared to the product from plants distilled in the fresh, green state. It will be noticed that, of the two determinations, one is chemical, the other being more of practical interest to growers and manufacturers.

There are cultivated and distilled, on the average, annually in the United States, *about fifteen thousand tons* of peppermint plants, yielding about one hundred thousand pounds of essential oil.

The distillation of the oil can be effected with *threefold the rapidity* from the dry rather than from green plants. In well-dried plants the handling and transportation to the distillers of about one-third this immense weight can be avoided; but many growers, fearing that, if well dried, a material loss of oil results by diffusion in the atmosphere, cannot be prevailed upon to distil the plants other than in the green state. As the quantity of plants and the labor in connection therewith is so great, it will be seen that the settlement of this question is one of great practical interest.

As to the *chemical* side of the question, one particular determination which I wished to make was whether the opinion held by some chemists was correct, that the *crystallizing* tendency of the oil would be greatly increased by continued exposure to the atmosphere. I had no reason for supporting this theory; on the contrary, my experience was quite different, as oxidized and resinified samples invariably crystallize less easily than those more recently distilled. Probably their theory was founded on the fact that the *mentha arvensis* plants of Japan are exposed to atmospheric action longer than ours prior to distillation.

Upon a clear day in September, in the middle of the day, when no dew or moisture was present, two loads of peppermint plants were cut down side by side at the same time. Both loads were immediately raked up in the fresh state, containing all the natural juices of the plant, then drawn to the scales and weighed. One load was immediately distilled, the other load being spread upon the ground and dried for two days in the sun. At this time the plants had become freed from nearly every particle of moisture, the leaves being so dry and brittle as to break off quite readily in handling. This second load, which had thus been dried in the sun and open air, was now spread out in a loft and exposed to a further drying and the action of the atmosphere for a little over six months.

The first charge of peppermint, which was distilled in the green state, weighed 2,332 lbs. and produced 6 lbs. 9 oz. of essential oil, being one pound of oil for each 355.35 lbs. of plants, or 0.2814 per cent. After the second load had been dried and exposed to atmospheric action, as stated, for a little over six months, it was then taken from the loft and distilled. I would here say that all of the essential oil in the pep-

permint plant, as indeed in almost all, if not all, essential oil plants is obtained from the *leaves and blossoms*; and this load of plants being extremely dry, and having been handled over a number of times, lost in the handling some of its leaves and blossoms. However, in distilling, the yield was one pound of essential for each 362.5 lbs. of green plants, which slight loss—about 2 per cent in the amount of essential oil—is certainly to be accounted for fully by the portion of blossoms and leaves which rattled off in the numerous rehandlings. The charge of peppermint, which was thus fully dried, had shrunk 49.4 per cent in its original weight.

It will thus be seen that, although the plants are very aromatic, both before and after cutting, *there is no perceptible loss of the essential oil by diffusion in the atmosphere*, the oil being so tightly held and "hermetically sealed," as it were, in its little prison cells, that a force greater than that existing in the atmosphere or the rays of the sun is necessary to free it. Indeed, I have noticed that the leaves which fall off from the plants in dry seasons, and remain upon the ground over winter, even though subjected to the action of rain and snows as well, are often found months afterward to be so strong that one would hardly suppose that any of the strength had passed off. It is known though in practical experience that, when the plants are once thoroughly dried and subjected to rains, the water carries off a portion of the oil, acting in that respect as a distilling power of low degree.

Now, as to the chemical determination made: The tendency of the oil to crystallize was not in any respect increased, the difference, if any, being so delicate as to admit of no positive measurement in degree. The specific gravity, however, of the oil produced from the plants which had been exposed to the atmosphere for a long time was found to be .013 greater than that of the oil which had been distilled in the fresh state. The action of the atmosphere upon the oil in the cells is thus similar to that produced upon the oil when exposed in partly filled vessels, in both cases increasing the specific gravity by the formation of an oxidized or resinified product heavier than the volatile and soluble portion. I would also say that the difference in specific gravity and oxidation *due to the atmospheric action* is really higher than indicated, for this reason: the insoluble resin exists principally in the stalks and stems of the plants, which, being of compact texture, cannot be readily penetrated by the steam, so that in quick distillation, in the case of dry plants, very little is carried off and recovered. In the case of green plants, the long continued distillation is sufficient to allow the steam to dissolve and carry it over.

In demonstration of this, I have observed that the last portion of natural essential oil coming from a charge of plants is more resinous than the first portion, following in this respect the laws of fractional and redistillation, in which the last fraction recovered is more resinous than the preceding ones, the ultimate fraction remaining in the still in the form of a solid and insoluble resin.

Further, as analogous to this, I would mention the fact that some distillers of oil of *wormwood*, wishing to make its adulteration more easy, distil the plants as long as possible in order to recover the resin, which renders the

presence of a lighter colored and less bitter adulterant less easy to detect.

As a matter of observation through many years' experience in distillation, I would say that the quality of essential oil, when distilled from the plants which are well dried, *but which have not been exposed to atmospheric action for a long time*, is superior to that distilled from green plants, in the following respects: in flavor, in solubility, limpidity, and color; but long and continued exposure to atmospheric action will counterbalance the good effects which would otherwise be obtained through the quick distillation of the dry plant.

As to the boiling point and solubility, there was hardly any difference noticed; the natural conclusion, however, would be that the sample containing the greater proportion of resin would have a slightly higher boiling point.

The crystallizing tendency of the oil was not increased by exposure to the atmosphere, and, in other respects, so far as investigated, no material difference was shown in the tests of the two samples.

This experiment, combined with more extended experience in connection therewith shows:

1st. No loss of essential oil of peppermint through diffusion in the atmosphere is occasioned by thorough drying of the plants and prolonged exposure to atmospheric action prior to distillation.

2d. Such exposure does not increase the crystallizing tendency of the essential oil.

3d. A heavy and insoluble resinoid is produced by oxidation, increasing the specific gravity of the oil, and theoretically affecting the boiling point and solubility by raising the former and decreasing the latter.

4th. To obtain the best results as to the quality of oil produced and the facility of handling and distillation, the plants should be dried as thoroughly as possible without endangering the loss of leaves and blossoms; distillation should then take place as soon as convenient to prevent the formation of resin.

NOTTAWA, MICH., August 14th, 1886.

Spurious Michigan Oil of Peppermint.

MR. ALBERT M. TODD, of Nottawa, the well-known grower of peppermint and distiller of peppermint and other oils, has recently discovered that a spurious *Michigan* oil of peppermint has been sold in England, which, from its label, pretends to be manufactured at "Evart, Michigan County, U. S.," by a person whose surname is given as Boeken, while the Christian name is very indistinct. Regarding this fraud, Mr. Todd says:

Having resided in St. Joseph county all my life, and being personally acquainted with every prominent peppermint grower in America, as well as every locality where peppermint is grown, I did not think that oil of peppermint could have been produced at Evart without my knowledge; yet, though the error on the label, as mentioned, as well as the nature of the contents of the bottle, both stamped the article as a fraud, to be doubly sure, I at once wrote to different authorities at Evart to ascertain "if any oil of peppermint had ever been bottled or manufactured there or in that vicinity, or if any person by the name of 'Boeken' had ever resided there," when I was assured by all the parties

with whom I corresponded that "there had never been a pound of oil of peppermint either manufactured or bottled at Evart, nor had any such person as Boeken ever resided there." Mr. Todd has examined this oil and found it to contain 50 per cent of oil of turpentine, 43 per cent of an oil having the odor of oil of peppermint, and 7 per cent of solid resin.

The temperatures for the different fractions were taken with a thermometer specially treated and corrected at Yale observatory. The fraction which contained the 50 per cent turpentine collected, boiled at temperatures between 342° Fah. and 390° Fah.

The 43 per cent of oil was collected at temperatures between 390° and 567°; and when this temperature was reached, the oil collected in the condenser was so thick that it would not flow out when cooled.

The oil was again tested for its solubility with alcohol, when it was found not to be completely soluble, which would of course result from the amount of turpentine which it contained. The facts most plainly demonstrated are that this brand of oil is fraudulent, both as regards the name and signature of the pretended maker, the locality in which it is supposed to be produced, and the nature of the oil.

How to Make Lanolin.

GAŁOWSKI (*Rundschau*, Prag, 1876) proposes the following method for the preparation of lanolin: The wool washings are first passed through a fine sieve to get rid of mechanical impurities, and then through a convenient quantity of cut straw or sawdust; the solution is then treated with magnesium sulphate, and the resulting magnesium soap, containing also the cholesterin, is collected, well washed with water, then drained, and allowed to dry by exposure to air. It is then treated with sufficient diluted hydrochloric acid to decompose the soap; a large excess of hydrochloric acid should be avoided, but sufficient added until a slight excess of acid is indicated, which is afterwards removed in the process.

The resulting fatty scum, consisting of fatty acids and cholesterin, is drained, and treated with petroleum-benzin in a closed vessel, slightly warmed to about 85° F. to aid solution, and then filtered through flannel in a closed filter-press. The petroleum-benzin is then driven off by evaporation or distillation, and to remove any remaining traces of hydrochloric acid the residue is treated with from one-tenth to one-quarter per cent of carbonate of magnesia, rubbed up with water, the mixture being then well washed with fresh portions of water until the water-washings are no longer milky from the presence of magnesium carbonate. It is again melted, filtered while hot through flannel, and, when cold, water is incorporated, and the lanolin becomes white, hard, and smooth.—*West. Druggist and Chem. News*.

New Tests for Lanolin.

PROFESSOR LIEBREICH has continued his experiments with the new ointment base, and has formulated the following more accurate tests for its purity and freedom from adulteration:

1. The most important test is its neutral reaction; if you apply to it blue litmus paper, it must not give any red color.

2. A more accurate test is to dissolve a small quantity of lanolin in benzin which is free from acid, and add a drop of phenolphthalein. If now you add a normal solution of potassa, the first drop gives a red color.

3. If you heat for a short time a quantity of lanolin with distilled water, you will have two layers; the upper is a clear, yellow oily fluid, but

not brown; the lower is a clear watery solution, which does not give any red reaction when applied to litmus.

4. If lanolin be freed from its water by heating it, the fatty matter must be completely soluble in ether, leaving no residue.

5. Lanolin when burned on a platinum spatula should leave no residue.

Terebene.

PURE terebene still continues to be reported upon more or less favorably, and we notice that the Collective Investigation Committee of the British Medical Association have received a large number of reports from all parts of the country. These, when tabulated and reported upon at the Brighton meeting, will, it is hoped, determine the place of the remedy in therapeutics.

Dr. J. Hutchison (Shawlands, N. B.) speaks very highly of it (*British Medical Journal*, July 3d), he having had but few failures with it in fifty-one cases of winter cough and bronchitis. We notice that he administered it in a way which has not previously been mentioned, viz. in cod-liver oil; but he did not find this method in any way superior to giving it on loaf-sugar. Still, if cod-liver oil is a part of a patient's physic as well as terebene, there is no reason why they should not be combined.—*Chem. and Drugg.*

Cacur, a Kaffir Emetic.

ONE of the most frequently employed of the many emetics used by the Kaffirs of South Africa is a green or yellowish-green fruit known as *Cacur*, *Cacuo*, or *small bitter apple*.

The author received a small supply of this, together with leaves and stalks, from Mr. J. A. B. Bayley. The fruit is a pepo, is caducous, quite yellow when ripe, but is used by the natives in the unripe condition.

They heat the fruit, squirt the contents into the mouth, and emesis is produced about fifteen minutes after swallowing.

The author believed that the fruit was derived from a plant of the order *Cucurbitaceae*, and this opinion was confirmed by Professor Oliver, of Kew, who believes it to be derived from *Cucumis myriocarpus* (Naudin), a green annual, referred to in *Flora Capensis*, 11, 495 (Harvey and Sonder).

Mr. Bayley states that it grows throughout Cape Colony and the Free State generally.

The plant produces fruit very abundantly; the pepo is sub-globose, about the size of a large gooseberry (weighing from 60 to 100 grains), and is beset with short and soft prickles. A section shows three parietal placentae, numerous seeds imbedded in a soft viscid pulp, which becomes more fluid when warmed. The pulp is bitter, and has a faint odor of cucumber. The rind is soft, but peels off with difficulty; the seeds are exalbuminous, and the testa, like the rind, is slightly bitter.

To determine its therapeutic action, the author experimented with the pulp upon himself and upon a large dog, and concludes that it is an emetic and cholagogue purgative; purgative in non-emetic doses, and in doses sufficient to produce emesis causing purgation if sufficient of the drug has been retained. Its emetic action is probably local. The quantity of the drug at his command was too small to permit the author to make an exhaustive chemical analysis of it, but he has ascertained that it does not contain an alkaloid, but a bitter principle upon which its activity depends. He hopes to complete this part of the investigation at some future time.—G. ARMSTRONG ATKINSON, M.B., in *Ed. Med. J.* and *Chem. and Drug*.

Saccharinates of Quinine, Strychnine, and other Bitter Alkaloids.

THE sweet principle derived from coal-tar, discovered by Dr. C. Fahlberg, and called by him *saccharin* (for which name Hager proposes that of *saccharinin*, in order to avoid confusion; see our July number, p. 138), being in reality an acid, it was natural that the idea should suggest itself to combine it directly with bitter alkaloids or other bases to form palatable salts. Since it has been shown that there is apparently no objectional feature connected with the internal use of *saccharinin* (as we shall call it until some better name is proposed), there will probably be some demand for the compounds of this substance with quinine, strychnine, and other bitter alkaloids.

Saccharinin is, chemically, "anhydro-ortho-sulphamine-benzoic acid," or, leaving off the first two prefixes, it is a sulphamine-benzoic acid. A salt of quinine, therefore, containing this acid will be the "sulphamin-benzoate of quinine." But to remind the prescriber of its relation to saccharinin, it is likely to receive the name *saccharinate of quinine*. It would be improper to use the term *saccharate of quinine*, for this would be a salt containing saccharic acid, derived from ordinary sugars by oxidation.

Dr. Fahlberg has already obtained a patent upon these compounds. His process consists in neutralizing an aqueous or alcoholic solution of saccharinin (or sulphamin-benzoic acid) with the respective alkaloid. In order to obtain chemically neutral salts, he adds, in certain cases, an additional quantity of saccharinin.

The resulting salts are said to have in a great measure lost the disagreeable taste of the alkaloids. Others again report that it requires the addition of nearly an equal part of saccharinin to fully cover the taste.

We have had several inquiries from correspondents, where the saccharin (or saccharinin) can be obtained. We would state for their information that the patentees are at present erecting works to produce it on a large scale. As soon as it is ready for the market, it will be duly announced.

Note on Cocaine.

WE note in several of our exchanges that Mr. Bignon, Professor of Chemistry at Lima, Peru, has patented a process which, according to his claim, yields the alkaloid at once free from secondary products. In what other countries (outside of Peru) the patent has been granted we are not informed, but we have no hesitation in saying that the patent is not worth the paper it is written on, inasmuch as it is merely a special application of a general process long and well known as one of the methods for extracting alkaloids.

The patented process is described as follows (in *Neueste Erfind. und Erfahr.*, 1886, 325):

The coca leaves are macerated during 48 hours in a 20-per-cent solution of carbonate of sodium, then dried, and afterwards extracted, during about 48 hours, with petroleum ether in a suitable apparatus. The cocaine which has been set free by the alkali is dissolved by the petroleum ether. If this solution is now shaken with water containing hydrochloric acid, cocaine enters into solution as hydrochlorate, while the coloring matters and [most] other impurities remain in the petroleum ether. By treatment with an alkali carbonate, the free base may then be separated.

The same chemist states that not only strong acids (as has been known for a long time), but even weak acids gradually decompose the alkaloid. Even solutions of the purest salts of

cocaine are changed in a comparatively short time by a sort of fermentation. He also states that, while free cocaine remains unaltered at the ordinary temperature and in a dry atmosphere, alcoholic solutions of the alkaloid, or aqueous solutions of its salts, do not keep long, and that their anæsthetic effect diminishes from day to day. He therefore recommends to prepare the solutions of the different salts of cocaine *ex tempore*, by dissolving the pure alkaloid in water with the aid of the requisite quantity of the respective acid.

Can Apomorphine be Spontaneously Produced in Solutions of Morphine?

DR. HERMANN HAGER reported about a year ago that he had found apomorphine in a solution of a salt of morphine which had stood for some time. Recently a paragraph published in the *British Medical Journal* (June 26th; quoted in *Pharm. Journ.*, July 17th) brought the information that a 3-per-cent solution of hydrochlorate of morphine, which had been kept eleven months, gave rise, upon injection, to violent and uncontrollable vomiting. On being submitted to a Paris analyst, the latter reported having found apomorphine in it, the inference being drawn that the morphine had undergone some change. This has called forth a letter from Messrs. Macfarlan & Co., the well-known manufacturers of morphine, stating that all their experience goes to show that morphine hydrochlorate, whether in the solid form or in solution, may be kept under ordinary conditions for several years without losing its value, and that they have never found apomorphine in old solutions of the salt even after heating them with excess of acid at a temperature of 200° F. for several days.

We may add that the statement of Macfarlan & Co. is more in accordance with what may be expected than the reported change of morphine into apomorphine. The latter body is produced from morphine or codeine by heating it with concentrated (about 25 per cent) hydrochloric acid at 140° C., that is, in sealed tubes, or by heating morphine with dilute sulphuric acid to 140° C., or by heating hydrochlorate of morphine a short time, with a concentrated solution of chloride of zinc, between 120° and 160° C. In view of the considerable resistance which the molecule of water—eventually withdrawn from the morphine molecule—offers to acids and to heat, it is questionable whether such a withdrawal and splitting up could occur by the mere contact of the morphine salt with water at ordinary temperatures.

Salicylate of Iron.

THE use of a mixture containing salicylate of iron is recommended by Dr. Braithwaite, of Leeds, in cases of diarrhoea in children where the motions are fetid. The formula for a child two years of age is:

Sulphate of Iron 20 grains.
Salicylate of sodium..... 20 "
Glycerin..... 8 fl. dr.
Water..enough to make 8 fl. oz.

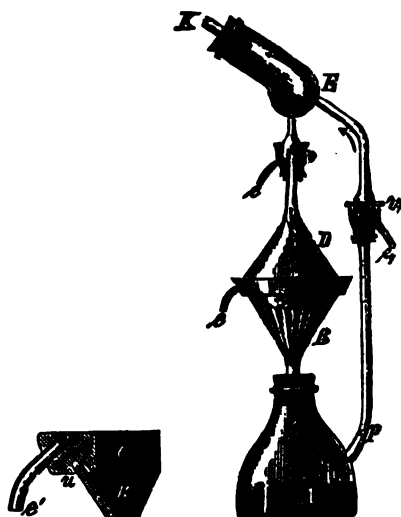
Dissolve the sulphate of iron and salicylate of sodium, each, in one-half of the water, and mix the solutions; then add the glycerin.

The color of the mixture is darker than port wine, and the taste is said not to be unpleasant.

One teaspoonful is to be given every hour until the motions become well blackened, and then at larger intervals, with an occasional dose of castor oil, to counteract the constipating effect.—After *Pharm. Journ.*

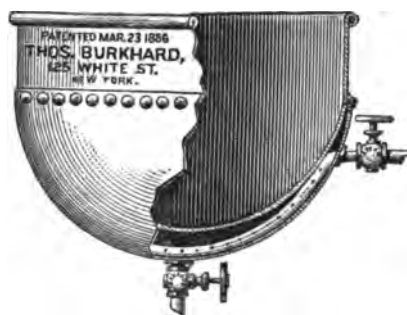
APPARATUS FOR CONTINUOUS EXTRACTION.

AN apparatus for continuous extraction, which may be taken apart or put together at a moment's notice, has been designed by Th. Weyl. Its construction is evident from the accompanying cut. At *v*, *v*, and *C* there are mercury joints. The portion marked *E*, with its two descending tubes, is one piece. So is also the flask *A*, with its tube *p*. The two mercury joints at *v* and *v* are made by attaching glass cups to the respective ends of the tubes, by means of cork or rubber rings. The mercury joint at the edge



Weyl's extraction apparatus.

of the funnel *C* is made, as shown in the smaller cut, by cementing to the edge of the funnel a wooden ring *C*, in the upper portion of which there is a groove filled mercury, in which the funnel *D* is placed. *K* leads to the condenser. The gutters *e*, *e*, and *e'* serve for emptying the mercury joints, but are, of course, closed with stoppers, when the cups are filled with mercury.—*Zeitsch. f. Instrum.*, 5, 126, and *Z. f. Anal. Chem.*, 1886, 396.



Burkhard's improved steam-kettle.

Cream Punch for Delicate Stomachs.

TAKE one cup of good cream; beat well, add sugar and one-half or a whole teaspoonful of brandy. To be taken through a straw as lemonade. If the patient is a dyspeptic and eats lightly of good food at meal time, the cream punch may be taken three hours after meals, as then intestinal digestion is best aided.

Corrosive Sublimate and Sugar as an Antiseptic Dressing.

A MIXTURE of corrosive sublimate with sugar in the proportion of 1 in 1,000, has been strongly recommended by Dr. Heidenreich as a first dressing for wounds on a field of battle (*Lancet*, June 12th, p. 1,135). It is claimed that sugar is the best substance for diluting the sublimate, being itself somewhat antiseptic, and is suitable for use wherever water is available. Of course, it is important that the mercurial salt should be equally distributed through the mass, which is easily effected by dissolving it in a little spirit and carefully rubbing up the sugar with it.—*Pharm. Journ.*

AN IMPROVED JACKET STEAM KETTLE.

HERETOFORE it has been customary to admit steam into jacketed steam kettles by a simple inlet, the jet of hot steam playing directly against the nearest opposite wall of the inner kettle, whereby this particular spot generally became highly overheated. Therefore, when the kettle contained liquids of high boiling point, it was not unusual that some of the contents would be baked against this particular spot, and otherwise injuriously affected. Mr. Thos. Burkhard, of New York, has now introduced an improvement by which the steam is uniformly distributed over the whole heating surface, with its original force and temperature, thereby insuring a perfectly uniform heating of the contents of the kettle, as well as a considerable saving in steam. This is accomplished by placing a coil of copper tubing within the jacket, which, being perforated, allows the steam to issue with its original temperature. The inventor also claims that the pressure is thereby regulated, and all risk of bursting avoided; and, in addition, that there is produced a reservation of heat and a superheating of the pipe itself.

These kettles are made of seamless copper, and tested to 125 lbs. pressure. They may be made either stationary or so as to be tilted over.

Impurities in Ether.

HAGER and others have held that any rectified ether which has a low specific gravity (say, between 0.735 and 0.725 or lower) cannot be contaminated with any of the heavier substances which are liable to be produced during the course of distillation. Accordingly, it would be unnecessary to examine such grades of ether for heavy oil of wine, or other substances which are left behind to a large extent, when some of the ether is allowed to evaporate spontaneously.

This assumption [which is not shared by experts in this country, so far as we are aware], has been shown to be fallacious by G. Vulpius, who found as much as 1% of heavy oil of wine or allied compounds in an ether having a spec. grav. of only 0.722. — After *Pharm. Centralh.*

Crystallized Quinidine.

ACCORDING to Dr. Hesse (*Berichte* 10, 2,154), quinidine (conchinine) crystallizes from alcoholic solution with 2½ molecules of water of crystallization, of which ½ mol. is given off at the ordinary temperature, and the other 2 mol. are driven off at 120° C.

According to Dr. Mylius (*Berichte* 19, 1,773), a hot solution of quinidine in absolute alcohol deposits on cooling well-formed prisms which contain no water of crystallization, but a molecule of alcohol in combination (C₂₀H₂₁N₃O₂ · C₂H₅O).

These two statements, however, though apparently contradictory, are not so necessarily, for it seems fairly obvious that it was not absolute alcohol that Hesse referred to as yielding a crystallization containing 2½ mol. of water, and at the most the official alcohol (*Pharm. Germ.*) of spec. gr. 0.830 to 0.834.

But, in addition, Dr. Mylius states that in his experience the alkaloid is deposited from a hot aqueous solution anhydrous. Besides the compound with ethylic alcohol, Dr. Mylius states that he has obtained similar combinations with methylic, propylic, and allylic alcohols, as well as with the bivalent ethylene alcohol, in the last instance the combination being 1 mol. of the alcohol with 2 mol. of the alkaloid.—*Pharm. Journ.*

The Medicinal Nitrites, Including Nitroglycerin.*

NITRITE of sodium must be regarded as the *inorganic* nitrite to be recommended in medicine, although it is open to the objection that decomposition will occur in the stomach if that organ contains much acid, a decomposition evidenced by the eructations of nitrous compounds occurring occasionally after the administration of this salt, and by the vomiting, and even diarrhoea produced by large doses. Nitrite of sodium is now generally sold in a fairly pure state, and the purer specimens are those of the crystallized salt, the sticks usually containing a considerable trace of iron, although this, too, is not an infrequent impurity to a slight extent in the crystals. Potassium nitrite, too, usually contains some. Probably the solutions are evaporated in iron vessels. The solubility of nitrite of sodium I find to be 1 in 1.14 of distilled water, 1 in 30 of rectified spirit, and 1 in 160 of ethylic alcohol, all at 60° F. The method of estimating the amount of nitrite present with which I have obtained the most accurate results is the permanganate process. Fairly accurate results can well enough be obtained by Eykman's or Allen's process for the estimation of ethyl nitrite, as Mr. Allen pointed out in regard to his own process in the *Journal of Chemical Industry* for March 30th, 1885.

Nitrites are stated, in solution or not, gradually to become converted into nitrates by the absorption of oxygen. It is, therefore, important to consider the stability of nitrite of sodium either in its solid state or in watery solution. The salt is described as deliquescent; in an ordinarily dry room it is so only to a slight extent; if exposed uncorked it does absorb water somewhat, but if kept in a well-corked bottle, however frequently opened, no change practically occurs. I have kept thoroughly dried powdered nitrite of sodium thus, and after four or five months it had gained barely 1 per cent by weight, and after being redried, it contained almost absolutely the same amount of nitrous acid as before exposure. I have kept the similarly dried powdered salt on the water bath for eighteen to twenty hours with the loss of an infinitesimal proportion of varying strength in nitrite, the small quantity lost being probably converted into nitrate. I have also boiled solutions for several hours, and have, by appropriate arrangement, bubbled air through solutions of the salt for days with like results. Thus, then, we see nitrite of sodium in solution, in the absence of stronger acids than nitrous, and of ferments, is a perfectly stable salt. Its watery solution is, however, somewhat apt to be the seat of the growth of a form of mould if exposed to the air, and such a growth naturally causes considerable deterioration in the strength of the solution.

We now pass to the organic nitrites, and with them I wish to consider *nitroglycerin*. Of the organic nitrites the *nitrites of methyl, ethyl, and amyl* alone need detain us. *Nitrite of methyl* (CH_3NO_2), although it has been administered, is unsuitable, as boiling below 32° F.; it is always sold in alcoholic solutions, and even this deteriorates very rapidly. *Ethyl nitrite* is specially considered in relation to spirit of nitrous ether, and so much has in recent years appeared in this journal concerning this substance and its estimation that I can comparatively briefly dismiss it. It is very generally agreed that the pharmacopoeial solution is not stable, especially when prescribed with water; its decomposition in this connection has been pointed

out by Mr. Allen (*Pharm. Journ.*, Nov. 21st, 1885, *AM. DRUGG.*, 1885, 216), and I can quite confirm his results. It is very commonly prescribed with solution of acetate or citrate of ammonium. With these preparations naturally a certain amount of double decomposition will occur, but as to the nitrous element, deterioration, though still rapid, is not quite so rapid as when water alone is employed. This spirit of nitrous ether while not then to be considered reliable as to its most important constituent, and therefore not suited for the more valuable uses to which nitrites are put, yet contains other constituents which make it useful as a mild diuretic and diaphoretic, and it will probably long continue to be so used in medicine. The exact value of these other constituents I hope ere long to ascertain. It has been proposed to make a solution of ethyl nitrite in ethylic alcohol or even in rectified spirit; these preserve the nitrite much better, especially the ethylic alcohol solution, but decomposition rapidly occurs when they are mixed with water, while for purposes of inhalation nitrite of amyl is preferable, as here both acid and base act somewhat in the same direction.

The method of estimating the amount of nitrite present in spirit of nitrous ether is now generally recognized to be by measuring the nitric oxide gas given by the decomposed acid radical, either Eykman's or Allen's process being employed. These two processes have been very fairly compared and criticised by Dott (*Pharm. Journ.*, Feb. 28th, 1885), and I have made many comparative experiments with the two methods, following Eykman's directions as given in this journal (July 23d, 1882) [first published in *NEW REMEDIES*, 1882, p. 139], and Allen's as published in the number for November 21st, 1885. I used both aqueous and alcoholic solutions of standardized nitrite of sodium and found either method gave almost accurate results. Allen's, of course, is much more easily worked, and, as he mentions, while his formula is roughly correct, you get more satisfactory results by correcting for temperature, pressure, and aqueous tension. I certainly object to his statement that a pipette is unnecessary to measure the solution to be tested, and I always employ one. Further, agitation by a purely transverse movement is generally insufficient; I use transverse agitation first, and then, after a few minutes, with one hand close the India-rubber tube, and with the other give a not very vigorous vertical movement. The closure of the connecting tube prevents agitation of the lower strata of fluid; the vertical agitation causes decomposition of any volatilized nitrite. I do not find cooling the tube in water, and correcting for the temperature of the water, gives more accurate results than merely allowing it to stand in the clamp until two readings are the same, and correcting at the temperature of the air. A source of fallacy to be avoided is the admission of air mixed with or dissolved by the solutions, but with care this need not occur. By waiting until all air bubbles have floated out I get quite as good results as by cooling boiling solutions of the substances to be used in an atmosphere of coal gas and filling the tubes in a similar atmosphere by a properly constructed apparatus. Almost identical amounts of nitric oxide gas were obtained by either Allen's or Eykman's method from various average samples of spirit of nitrous ether; if the samples were very defective in nitrite, Eykman's process gave distinctly lower, and, I think, more accurate results than Allen's. Here one was using from 10 to 20 C. c. of the spirit, and the high tension of the other constituents was probably the cause of the difference. To sum up,

Eykman's process, as one might conjecture, is more accurate than Allen's, but more open to experimental errors, and much more difficult to employ. Allen's is the method which meets our ordinary wants most conveniently.

Nitrite of amyl has still to be discussed. It is much more stable than the corresponding salt of ethyl, and if preserved in well-stoppered bottles, protected from the light, it takes some years to become even approximately inert. Good specimens, when fresh, have usually from seventy-five to eighty per cent of actual nitrite, and even after more than a year, with bottles occasionally opened and not very carefully preserved, I generally find about fifty per cent. The chief products of decomposition are amyl alcohol, amyl valerianate, and valerianic acid. The strength as to the nitrite is rapidly tested in the same way as spirit of nitrous ether, the decomposition of the compound is not quite so rapid, however. Various menstrua and combinations of menstrua have been recommended for the internal administration of amyl nitrite, but I cannot regard any of them as commendable. Nitrite of amyl should be employed for inhalation alone.

Finally, we pass to *nitroglycerin*, the trinitrate of glyceryl, propenyl trinitrate, or glonoin. There are several other nitrites somewhat allied to nitroglycerin, which probably behave in a similar manner, as nitrosaccharose, nitroamylum, and nitrocellulose—the last certainly (Hay, *Practitioner*, May, 1883). None, however, is so suitable as nitroglycerin.

This compound ether, as I already have mentioned, is regarded, by Hay especially, as owing its activity to its decomposition in the blood with the production of a nitrite—a matter still, I think, *sub judice*.

The drug, however, is practically unacted on by the gastric juice—a point of great importance, where we wish absorption without decomposition. Nitroglycerin is a sweet, colorless body, with a slightly pungent taste; its solubility in menstrua other than water is correctly enough stated; as a rule, in water many authorities note it as almost or quite insoluble, Hay (in various papers) as one in eight hundred. I find it to be one in seven hundred and sixty, but it requires four or five days to dissolve to this extent, and the bottles require frequent agitation. When prescribed with water, the water must always be distilled, or decomposition will occur, the rapidity of decomposition varying directly as the amount of salts in the various waters. Its watery solution (in distilled water) is quite stable, provided the nitroglycerin be pure. Solutions in alcohol keep equally well.

The tablets of the pharmacopoeia are generally fairly uniform as to their strength—no one would expect them to be mathematically exact—and are quite stable.

I should suggest that a one per one-thousand aqueous solution of nitroglycerin be employed in therapeutics, the average dose being five to thirty minims. Some clinicians have stated that the alcoholic or watery solution acts more rapidly than the tablets do, and I agree with them; the difference, however, is very slight, but the tablets hold their position from their convenience alone. The name nitroglycerin being alarming to some persons, trinitrin has been used instead; propenyl trinitrate may also be introduced into medical parlance, but I should give preference over all to trinitrate of glyceryl (glyceryl trinitras), which expresses its composition and is an accurate name. Nitroglycerin leads one to suppose we are dealing with a nitro-substitution body. I may mention I estimated the strength of the nitroglycerin solutions by decomposing the ether with caustic potash, and

* Extracts from a paper on the "Pharmacognosy of the Nitrites," by G. Armstrong Atkinson, M.B., in the *Pharm. Journ.*, July 3d.

calculating the amount of nitrite formed by comparison with a standardized solution of nitrite of sodium, as recommended by Hay, using both the starch iodide reaction and William's modification of Griess' metapenylenediamine test. To this latter the production of the resinous body I have referred to is a slight objection, but practically it does not interfere with the delicacy of the reaction, the amount of dilution being so great. Further, I dissolved weighed quantities of nitroglycerin in water, so as to prove that seven hundred and sixty parts of distilled water would dissolve one part of nitroglycerin.

The Purification of Cotton-Seed Oil.

THE quantity of cotton seed annually crushed and pressed for oil in the United States probably equals two and three-quarter millions of tons, and if we add to this the half million tons similarly treated in Europe, the proportions of this giant infant industry begin to appear. As expressed, the oil is of an intense ruby color, sometimes verging to black, owing to its containing in solution a powerful vegetable coloring principle, properly termed *gossypin*. This peculiarity distinguishes it from all other oils. The oil cells appear in the seeds as brown specks dispersed through the albuminous matter. According to Mr. James Longmore, of the Liverpool section of the Society of Chemical Industry, who has given great attention to the subject, the quantity of coloring matter in a ton of crude oil is fifteen pounds, although this proportion must vary considerably. The woody husk of the seed also contains a large quantity, apparently of the same nature.

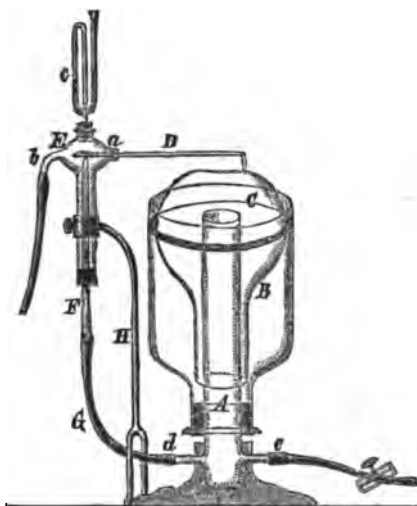
Its properties are insolubility in acids, slight solubility in water, free solubility in alcohol or alkalies. In its dry state it is a light powder of a pungent odor, of a brown color, and strongly tinctorial.

For expression, the seeds are first crushed by passing through rollers, and then ground to a fine state of division under edge wheels. When sufficiently reduced, the powder is transferred to steam jacketed kettles and heated for about ten minutes to a temperature sufficient to render the oil more easily expressible, and to coagulate the albumin of the seed. From the kettles the hot and finely-ground seed is put in coarse bags, each making a cake weighing about ten pounds, and subjected to powerful hydraulic pressure. The crude, nearly black oil, containing the coloring matter in solution, is by this means expressed, and runs into a tank from which it is transferred to the refinery. The next step is the removal of the coloring matter, the process bringing the oil to a light straw or yellow tint.

The tank used is of iron; it is provided with a mechanical agitator, and its capacity sufficiently exceeds that of the charge of 10 tons weight of crude oil, and 30 cwt. caustic soda lye of 10° to 12° Twaddell. The lye at the temperature of 60° F. is fed slowly by perforated pipes extending over the surface of the oil and distributing uniformly. As the agitation proceeds, the lye and oil, which are both cool, mix, and latter gradually becomes full of black, flocculent particles of soap, caused by the partial saponification of a portion of the oil by the caustic soda lye. The agitation is continued for about half an hour, and at the end of that time a portion is taken out and allowed to stand. If the soapy particles precipitate, and the oil is found nearly deprived of color, the operation is then terminated. If not, the agitation is continued, more lye being added until the desired discoloration is obtained. The charge of oil is then allowed to stand for twelve or fifteen hours, until the "mucilage" or par-

tially saponified portion of the oil, with the liquid excess of lye used, has settled away. The clear oil is then run off, and the refining completed by washing and bleaching.

The success of this process evidently depends on the property the coloring matter possesses of solubility in alkalies. The particles of soap seem to be sufficiently alkaline at the moment of forming to inclose within them the coloring matter, which is thus precipitated from the rest of the oil. After separation, the precipitate is treated with strong soda lye, say 70° Twaddell, and heated. The coloring matter



Schiff's thermoregulator.

is thus dissolved out, the solution filtered from the saponaceous mass, and dilute sulphuric acid gradually added to the filtrate until the alkali is completely neutralized. The gossypin then separates as a flocculent precipitate. This is collected on a filter, carefully washed, to remove any trace of acid, and dried slowly at a low temperature. It is then ready for use as



Giroud's thermoregulator.

a dye, and gives fast colors on both wool and silk. The saponaceous mass, partially discolored by the caustic soda lye, may either be converted into hard soap, or, by addition of milk of lime, be deprived of any albuminous matter, be bleached with chlorated lime (chloride of lime), and, by treatment with a mineral acid, the refined oil mingled with fatty acids obtained.

Sodium Cheapened.—According to a statement in the *Scientific American* (June 5th, p. 362), Mr. H. G. Castner, a chemist, resident in New York, has discovered a new method of distilling sodium, by which that metal will be produceable for about one shilling per pound. As sodium is an important material in the manufacture of aluminum, this discovery, should it be confirmed, would have an important influence upon the future of that metal, since its cost would be considerably reduced. A supply of sodium at a low price might also bring magnesium, silicon, and boron within the reach of practical application. [In the case of magnesium, this has already been accomplished by preparing it electrolytically.]

THERMOREGULATORS.

THE number of thermoregulators, or apparatuses for maintaining uniform temperatures, is already quite considerable, but perfection is far from being reached. We have already described various forms, and in the following we give an account of several others:

1. *Schiff's Thermoregulator* (*Ber. d. Deutsch. Chem. Ges.*, 18, 2, 833; *Zeitsch. f. Anal. Chem.*, 1886, 385). This is entirely composed of glass, and may be easily put together.

The gas enters through the tube *e*, and reaches the burner through *b*. *A* is a wide-mouth bottle without bottom, fastened by means of a cork over the glass tube *A*. The bottle *B* is filled with water (to which a little hydrochloric and carbolic acids are added), and a flask *B* is inverted over the tube. This flask, floating in the liquid, is, of course, very sensitive to any increased pressure or rush of gas coming from the main supply. After the gas has passed through *e*, *A*, *d*, and *F*, it issues at the orifice of the tube *F* inside of the globe *E*. A glass rod *D* passes through a thin rubber-disk in the tubulure *a*, the outer end of the tube being bent downward, and the inner end flattened and provided with a rubber disk, which, when pressed against the orifice of the tube *F*, shuts off the gas. The whole arrangement, *E*, *F*, may be adjusted higher or lower by the rod and clamp *H*. Whenever the gas enters with more than ordinary pressure, the flask *B* is raised, pushes up the outer end of *D*, and the inner end of this closes the orifice of the gas delivery tube.

A separate small tube, not shown in the cut, leads to the burner, where a small flame is kept up even when the regulator has shut off the supply.

2. *Giroud's Thermoregulator* (*Berichte, l. c.*). The gas passes in the in the direction of the arrows. After issuing from the central conus, it enters the space *b*, which is covered by an inverted cup floating in some kind of liquid (such as glycerin). The upper wall of this cup has a small orifice *a*, through which a small amount of the gas may reach the burner at all times. When the faucet *c* is turned in the manner shown in the cut, the current of gas passes unobstructed, as indicated by the arrows, and reaches the burner by means of tubing to be attached to *d*. When the pressure becomes too great, the cup *b* is raised and with it the conical attachment *e*, whereby the passage of the gas is interrupted. When it is desired to make the apparatus more sensitive to any variations of pressure, the small orifice at *a* is closed with a drop of stearic acid.

Vanillin in Asafoetida.

MR. E. SCHMIDT, while engaged in the preparation of ferulic acid from asafoetida, observed in the last mother-liquor of the acid a pronounced odor of vanillin. This observation has been followed up by Leineke and Denner, who have succeeded in isolating vanillin from the drug. The *modus operandi* employed is as follows: The resin is powdered and repeatedly treated with ether, the filtered solutions shaken up with a concentrated solution of sodium bisulphite, the alkaline solution acidified with sulphuric acid and again extracted with ether.

The crude vanillin obtained after distillation of the ether is again treated with sodium bisulphite, sulphuric acid, and ether, and the ethereal residue is mixed with a little water, filtered, and crystallized over sulphuric acid. The vanillin appears in well-shaped, easily volatilized crystals, melting at 81° to 82°, and possessing all chemical and physical properties of ordinary vanillin.—*Chem. and Drugg.*

The Manufacture of Ceresin from Ozokerite.*

In the showcase of a Belgian manufacturer of candles, at the Antwerp Exhibition, was to be seen a fragment of wax-like substance labelled "Ozokerite, or Vegetable Wax." This fact shows how little is known, even by those most nearly interested, of an industry which, dating back only about fifteen years, has attained an annual value of upwards of half a million pounds sterling. The ignorance is no doubt due, mainly, to the paucity of information that has been published respecting the industry and the raw material used in it.

The first attempt at bleaching mineral wax known to the author dates from 1870. The first industrial results were obtained by H. Sljehely, of Stockerau, near Vienna, Dr. Pilz, of Carlsbad, and J. F. Otto, of Frankfort-upon-Oder; ceresin was introduced into the market by these different houses in the course of 1872.

During the last ten years a number of processes for the purification of ozokerite have been proposed, very few of which have been practically successful. At the present time scarcely more than two processes are employed, both of which are based upon the employment of sulphuric acid. In the more important establishments where mineral wax is refined, the ozokerite is heated in contact with sulphuric acid to a temperature of 180° C. and even higher, by which means an almost complete decomposition of the sulphuric acid and carbonization of the substances separated by it is effected. In some smaller factories where the operations are conducted at a much lower temperature, the acid, charged with the impurities, collects at the bottom of the vessel as a black tarry mass that is easily separated.

In whatever way the operation is conducted, it is necessary first to free the crude ozokerite, as delivered from the melters of Borislav in eastern Galicia, from the small quantity of water that it always contains; for which purpose it is dried by heating it to 120° C., at which temperature the water is entirely driven off. The mineral wax requires to be heated very slowly to avoid sudden ebullition of the melted mass, through the superheating of the water, and small pieces of the crude wax are thrown into it whenever it threatens to rise. In some cases this heating is effected in the same boilers as the heating with sulphuric acid; in others a special vessel is used which allows of the deposit of mechanically mixed impurities at the bottom. The vessels for the preliminary boiling, which should be of a capacity sufficient for a day's product, are heated either over a bare fire, or are jacketed and heated by steam. In the former case the apparatus takes the form of an alembic, consisting of a hemispherical boiler with dome and cooling worm, in which any vapor of the light oil given off during the melting is condensed. When the heating is effected by steam, the small quantities of hydrocarbon carried away with the steam do not necessitate any arrangements for condensation.

In carrying out the first-mentioned method of bleaching, where the temperature is raised to 180° C., the mixture of the ozokerite with the sulphuric acid is effected either by means of an iron or copper stirrer worked by hand, or by a mechanical agitator. Although the latter arrangement would appear in principle to be much the more rational of the two, it is not the most used, even in the larger manu-

factories, in consequence of practical difficulties that have not yet been satisfactorily overcome. After the earth-wax has been freed from water it is placed in the acidifying vessel with a mixture of vitriol and fuming sulphuric acid in proportions corresponding to the quantity required; it is then gradually heated with constant stirring to 180° C., at which temperature the sulphuric acid is almost completely driven off. After neutralization of the last traces of acid and partial decolorization, the mixture is allowed to stand. The tolerably clear layer of ceresin that forms at the top is drawn off and filtered through paper: the residue is pressed, whilst still in a warm pasty condition, in hydraulic presses, the runnings being also filtered through paper. As a result of these operations only about two-thirds of the ceresin present in the ozokerite is obtained, the other third being retained in the press residue. This is now generally recovered by extraction, petroleum benzin being the solvent used in most factories, and only here and there carbon bisulphide. The ceresin extracted is freed from traces of the solvent by passing superheated steam through it and then filtered. The entire yield by this method of operating amounts to 70 to 75 parts of white, or 80 to 85 parts yellow ceresin from 100 parts of ozokerite used.

According to the second method of working, the dehydrated ozokerite is introduced into the mixing vessel in the melted condition at the lowest possible temperature, and then mixed by means of a mechanical stirrer or a current of dry air with exactly the quantity of sulphuric acid required to effect the reaction. After standing, the top layer of dark-colored but clear ceresin is drawn off into another vessel, where it is neutralized and decolorized and then filtered. The black tarry residue is neutralized and submitted to distillation, the distillate consisting of paraffin and mineral oils. This method has many disadvantages and is not largely followed. Both methods are, indeed, defective, since it is known that crude ozokerite can be made to yield 90 to 92 per cent of a white bleached product instead of the 70 to 75 per cent usually obtained in manufacturing.

The filtered ceresin, if intended for yellow goods, is brought up to the right tint by means of gamboge, turmeric, dragon's blood, or one of the various aniline colors soluble in fats, and then poured into moulds to cool. The "half white" and "white" ceresin is stirred continually, while cooling to prevent crystallization, and it is not until it has solidified to a pasty consistence that it is poured into the moulds. In this way a whiter appearance in reflected light is produced.

White ceresin is frequently mixed by the manufacturers with the lower priced paraffin and the yellow ceresin with resin. The addition of paraffin cannot be detected either by chemical tests or determination of the specific gravity. It is, however, hardly to be deemed an adulteration since in some cases, as for illuminating purposes, its presence is advantageous. The addition of resin ought, however, to be deemed an adulteration. For its determination the suspected ceresin should be dissolved in hot alcohol, and the mixture then cooled and filtered. The ceresin being almost insoluble in cold alcohol is removed, and any resin present will be found in the residue upon evaporation of the filtrate.

Colocynthin related to Elaterin.

ACCORDING to E. Johannson (*Journ. de Pharmacologie*, p. 258), when colocynthin is heated with dilute sulphuric acid, it is split up into colocynthin, elaterin, and bryonin.—*Pharm. Journ.*

Aluminum in Germany.

[REPORT OF CONSUL-GENERAL RAINE, OF BERLIN.]

I HAVE the honor to report that in Hamelingen, near Bremen, a factory is in the course of erection which projects the production of aluminum (or aluminium) and magnesium on a large scale.

The statement, however, that this will be the first factory of its kind in the world must be considered as erroneous, since Messrs. E. H. & A. N. Cowles, of Cleveland, O. (Cowles' Electric Smelting and Aluminum Company), have for some time successfully produced aluminum and its alloys in large quantities and at reduced prices. It is well known that heretofore aluminum and magnesium were produced only in small quantities at high prices.

The consumption was comparatively limited. The new factory, like that of Cowles', projects production in large quantities under Graetz's patent.

The process of the Frenchman, Deville, heretofore generally in use, consists in decomposing sodium-aluminum chloride in reverberatory furnaces by adding to it, in a suitable manner, a flux (formerly fluor-spar, now cryolite), whereby the sodium used for reductions is replaced by zinc.

By this process the price of aluminum has been not less than 75 to 80 marks (= \$17.75 to \$20), a metal too costly for many technical purposes.

Graetz readopted the idea of Bunsen, to separate the aluminum by electricity. He applies a very powerful dynamo-electric current, which he conducts through molten sodium-aluminum-chloride, whereby the desired metal is deposited at the negative electrode (cathode), and chlorine at the positive electrode (anode).

This process has been patented nearly everywhere. The aluminum, by its slight specific gravity—it is only $2\frac{1}{2}$ times heavier than water—has for a long time encouraged the hope that it could be produced in large quantities at a low price, and thus become more generally available for technical purposes.

Louis Napoleon spent large sums for experiments. Deville's process was the result. Napoleon thought that it could be used for the manufacture of military cuirasses and helmets.

The aluminum combines lightness with great durability, beauty, and plasticity. It can be drawn into fine wire (down to one-fifteenth millimeter in thickness) and beaten into thin lamels.

It is capable of taking a fine polish, and can be engraved, and, by galvanism, silvered and gilded. In the air it does not tarnish, and in water it remains unaltered. Though it is not a precious metal, it is, notwithstanding, not more subject to corrosion by acids and alkalis than iron. It is, however, not fire-proof; by combustion it is reduced to valueless alumina. Its fine, white, silver-brilliant, not-tarnishing color makes it very adaptable for ornaments of all kinds, opera-glasses, etc.

Besides the pure aluminum, its alloys are also useful for many technical purposes. A particularly beautiful bronze, brilliant like gold, is obtained from 90 to 95 per cent copper and 10 to 5 per cent aluminum.

Other compounds are stated to be eminently suitable for parts of machinery.

Magnesium is likewise separated by the electric current from a combination with chlorine.

New Austrian Pharmacopœia.

It is reported that the work of revising the Austrian Pharmacopœia, the last edition of which was issued in 1869, is to be initiated during September of the current year.

* Abstract in *Pharm. Journ.*, July 31st, of a paper by E. Sauerlandt in the *Chemiker Zeitung*, 1886, pp. 21 and 38.

IMPROVEMENT IN KJELDAHL'S METHOD OF ESTIMATING NITROGEN.

THE estimation of nitrogen in organic and inorganic substances has become such an easy operation since the general introduction of Kjeldahl's method that it may be executed by any one having moderate analytical experience. We have described it in detail in previous issues, and, therefore, before describing the improvement we wish to draw attention to, will only briefly recapitulate it.

Not more than 1 Gm. of the nitrogenized substance (and if it contains over 10% of nitrogen, not more than 0.1 or 0.2 Gm.) is introduced into a flask of about 200 C.c. capacity, about 0.7 Gm. of oxide of mercury added (this takes no part in the reaction), and then 20 C.c. of pure concentrated sulphuric acid. If the substance is fatty, a small piece of paraffin will prevent excessive foaming. The flask is then loosely stoppered, best with a glass bulb having a long stem, placed in a slanting position on wire-gauze, and at first heated gently, but afterwards to boiling until the contents are colorless. The whole of the nitrogen has now been converted into ammonia, combined with sulphuric acid. The liquid is next rinsed into a dis-

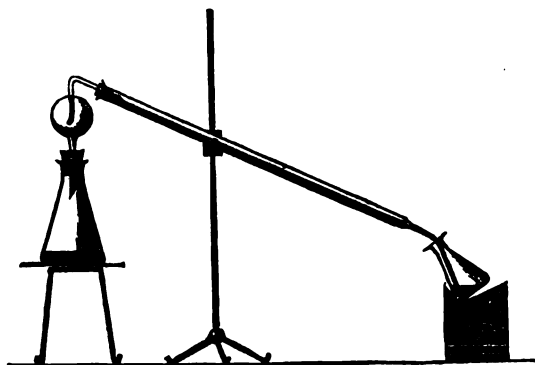


FIG. 1.—Determination of nitrogen.

tilling flask, 120 to 140 C.c. of a solution of soda (free from nitrate) containing about 25% of NaHO are added, and then 25 Gm. of a solution of sulphide of potassium (40 Gm. in 1 liter) to precipitate the mercury as sulphide.* The liquid is then distilled, and the distillate caught in standard sulphuric acid. From the amount of acid saturated by the ammonia, the quantity of nitrogen present in the original substance is calculated.

As there is some risk of small quantities of the alkaline contents of the flask being mechanically carried over during the distillation, it is customary not to connect the condenser directly with the flask, but to interpose a globular or other kind of bulb-tube, such, for instance, as is shown in the annexed cut (Fig. 1).

It has, however, been ascertained that even this precaution is not sufficient to guard against the mechanical transportation of traces of the alkali with the vapors. According to Arth. Rindell and F. Hannin, this may be accomplished in a practically complete manner by making the vapors pass a tube filled with small glass pearls, inclosed within another tube, as shown in the cut (Fig. 2). This tube is closed below with a nickel sieve, has a diameter of 10 to 12 millimeters, and should contain a column of glass pearls at least 8 Cm. high.

The same authors also recommend to use a very dilute volumetric sulphuric acid, preferably one containing $\frac{1}{10}$ of a molecule in the liter, of which 1 C.c. corresponds to 0.0006862 Gm. of nitrogen.—*Zeit. f. An. Chem.*, 1886, 155.

A NEW AND IMPROVED FORM OF NITROMETER.

THE nitrometers heretofore designed and described appear to be, all of them, affected by certain defects and sources of error, nearly all of which may probably be eliminated by improvements in construction. A proposition in this direction has recently been made by W. Knop, who figures and describes his improved apparatus in the *Zeitsch. f. Anal. Chem.* (1886, 305.)

The designer's chief object was to eliminate the error caused by a variation in volume, in consequence of the expansion of the connecting tubing or the inequality of temperature existing in the several portions of the apparatus. He therefore constructed the latter in such a way that every portion of the apparatus is immersed in water during the reaction, while the rubber tubing used for connection is the very stoutest (but flexible) that it is practicable to use.

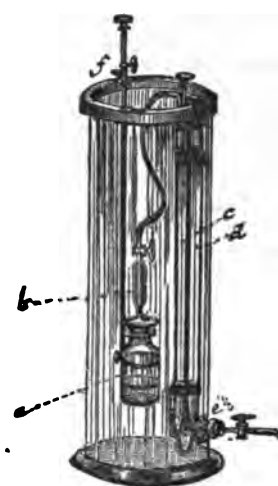
The different parts of the apparatus are: First, a generating vessel *a*, being a bottle into which is fitted an accurately ground, hollow glass stopper continued into an expanded tube *b* which terminates in a faucet. The tube *b* is filled with small glass pearls.



FIG. 2.

a measured or weighed quantity of the liquid to be examined, introduced into a short tube, is placed within the generator and the latter again stoppered.

Previous to this, the U-tubes may be filled with distilled water, which is facilitated by the fact that the ungraduated tube is longer than the other and therefore projects above the surface of the water in the glass jar. The bottle is then placed within the clamp at the foot of the rod and lowered down into the water, the glass faucet having, of course, previously been opened. Next it is necessary to adjust the water in the measuring tube so that it will stand exactly at 0 mark. This is done simply by allowing enough of the distilled water to escape by the faucet at *e* until this point is reached. The rubber tube leading to the measuring tube must be immersed in the water. Both this and the shorter piece of rubber tube connecting the burettes is to be of the very stoutest pure gum tubing with a very small bore. After the apparatus has stood a while, so as to acquire a uniform temperature, the generating bottle *a* is again drawn up, and, by inverting it, the liquid to be tested (contained in the intro-



Knop's nitrometer.

Second, a U-tube; consisting of the two burette-shaped tubes *c* and *d*, which are connected below by means of a short piece of heavy rubber tubing. One of these burettes—that which is not graduated—has a tubulure near its bottom, and this tubulure is connected with the glass faucet which passes through the tubulure of the large glass jar, into which the whole apparatus is placed. It may be stated here that the jar is to be filled with water after all parts of the apparatus are placed within it, in order to equalize the temperature. A brass-ring surrounds the upper edge of the jar, and to the ring are fastened two clamps, one of which holds the U-shaped measuring tubes firmly in position, while the other holds a rod which may be raised or lowered, and the lower end of which serves to hold the generating bottle.

When the apparatus is to be used, the jar is filled with water at or near 60° F., the rod holding the generating bottle is drawn up, and the bottle removed and placed on the table alongside of the jar. The rubber tubing connecting the bottle with the measuring tube must be long enough to permit this without stretching the tube. Next the stopper is removed from the bottle and, having been turned upside down and being held in this position (while the glass faucet is closed), some alkaline bromine solution is poured in. This will flow over the glass pearls and moisten them thoroughly, and any gas which will subsequently pass over them will be thoroughly washed and freed from carbonic acid thereby. The stopper is now inserted in the bottle, and left there until all excess of liquid has drained off and run into the bottle. A sufficient amount of the bromated lye is now poured into the bottle, and

duced tube) made to mingle with the lye and thoroughly agitated. The bottle is then re-immersed, and as gas is given off and displaces the water in the measuring tube, a sufficient quantity of water is allowed to flow from the other tube through *e* to equalize the level in the other. When the generation of gas has ceased, the level in the two tubes is restored exactly, and after the temperature has been allowed again to become equalized, the volume of gas in the measuring tube read off.

This apparatus is manufactured by Franz Hegershoff, of Leipzig, and may be obtained through dealers in chemical apparatus.

No matter what form of nitrometer may be used, or which nitrogenized substances may be analyzed, there are always some sources of error which can only be ascertained indirectly. One of these is the solubility of free nitrogen in the bromated lye. In order to eliminate this error it is, under all circumstances, advisable to make—previous to each actual analysis—a preliminary experiment with a known quantity of a standard solution of pure chloride of ammonium. For this purpose, 10 Gm. of the pure salt are dissolved in distilled water to measure 2,089.4 cubic centimeters, and portions of this, measuring 200 C.c. (or smaller quantities, according to the capacity of the measuring tubes to be used) are put up in suitable vials or tubes, ready for use. Each C.c. of such a solution corresponds to 1 C.c. of dry nitrogen at 0° C., and 760 Mm. pressure (nitrogen is calculated as 14.01, and chlorine as 35.368). 100 Gm. of chloride of ammonium then yield 26.24676 Gm. of nitrogen. [1,000 C.c. of nitrogen at 0° C. and 760 Mm. weigh 1.25658 Gm.] A series of trials should

* The addition of the oxide of mercury and its subsequent removal by sulphide of ammonium are improvements introduced by Reilmair and Stutzer.

be made with this standard solution, and the results compared with the yield required by theory. The difference, averaged from five or more closely agreeing trials, may be set down as the correction necessary to be applied when making an analysis of an unknown nitrogenized substance.

Additional Note on Strophanthus.

As a supplement to our note on Strophanthus, the new African cardiac remedy, published in our last number, p. 143, we print here some extracts from Thomas Christy's *New Commercial Plants and Drugs*, No. 9 (London, 1886), which extend our knowledge on the subject.

"It was at first supposed that the Kombé arrow poison was derived from the *Strophanthus hispidus*; but upon specimens being submitted to Professor Oliver, of Kew, he was led to doubt its identity with that plant, and described it as *Strophanthus Kombé*.

"As is frequently the case with new plants, the character of which is not generally known, a variety of Strophanthus, of a very inferior kind as regards its therapeutical action, has been sent over, and, fortunately for the reputation of the drug, the supplies were condemned before being circulated.

"I have instructed a collector to at once start for the interior and collect supplies of this important seed, and have taken steps to insure the collection of the true Kombé variety and its arrival in a sound condition.

"For some years I have supplied several medical men in this country and abroad with the seed pods, and have from time to time heard glowing accounts of its action in severe cases of fatty degeneration of the heart. In one case, when my supplies ran short, I received imploring letters, as the patient was dying for want of the drug."

"Soon after the publication of Dr. Fraser's article in the *British Medical Journal*, I received a letter from Professor Fraser, in which he gives particulars for the guidance of those making the tincture.

"It is also important to note what he says as to some inferior seed pods having been imported into this country. It will be a most unfortunate thing if this parcel has been circulated amongst medical men, as it is certain to greatly damage the reputation of a drug which has so far given such excellent account of itself.

"As regards the probability of supplies, I have since July last year been on the alert, and two or three collectors have been endeavoring to get supplies for me. I had a parcel weighing about twenty ounces sent me in August last, which was speedily consumed. I have instructed a trustworthy collector to go into the interior especially to secure reliable supplies. Professor Fraser, under date of 7th December, 1885, writes me:

"DEAR SIR:—As you may soon be disposing of Strophanthus to druggists throughout the country, I wish to make some suggestions regarding the tincture to supplement the sentence on the subject in the *British Medical Journal*.

"I should there have stated that I use—and find it advisable to use—*rectified spirit*,* and not proof spirit, in preparing the tincture. Of the various modifications I have tried in the preparation of the tincture, the one I prefer as yielding the best preparation is to pack the finely-ground seeds—after drying for some hours between 100° and 120° F.—in a percolator, pass washed ether through until it is colorless, or almost so, and then pass rectified spirit

through, so as to obtain one pint of tincture for two and one-half ounces of seeds. The ether solutions are rejected, as they are inert and contain much fat.

"On the first addition of ether, and afterwards of rectified spirit, percolation is prevented for twenty-four hours, so as to allow of maceration of the powdered seeds. The dose of this tincture is from four to eight min. and it mixes with water without change.

"I have seen some strophanthus seeds which have lately been brought from Africa, that are not satisfactory.

"The pods have been gathered before they were ripe, and the seeds are extremely badly filled.

"These seeds would produce a very inferior tincture.

"What are the prospects of a supply being got? Numerous letters come to me on the subject."

"I have received some strophanthus from the Gold Coast and some from Sierra Leone, of which I give a few notes below.

"*Strophanthus Bullenians*.—This was received in the form of a mass of pod and seed tufts, with but very few seeds.

"From what I have been able to determine, the seeds are larger, measuring about three-eighths of an inch by one-eighth, and more corrugated than those of the S. Kombé. The tufts are entirely different to those of the latter variety, and could not possibly be mistaken.

"They have more the appearance of wool than of silky hairs. The pod, on the other hand, from what I can gather from the broken pieces, is very similar to that of the Kombé variety.

"*Strophanthus Sp.*—This was received from Lagos, and, like the above, is known as an arrow poison. The pod is about twelve inches long, and about six inches in circumference, with the appearance of the Kombé pod. The seed is light brown in color, slightly corrugated, pitted, and in shape like that of other varieties. In this variety the tuft is as distinct as it is in the Kombé, but instead of the stem being whitish, it is brown. The hairs, though white, have not the beautiful silkiness of the Kombé. I sent this variety to Kew, and other museums and herbariums, but it is one that is not, so far, classified. I have sent for the leaves and flower to enable it to be named."

What is the Best Tooth-powder?

MR. A. D. MACGREGOR, of Kirkcaldy, in an article on Boric Acid and the Affections of the Mouth, published in the *Brit. Med. Journ.*, makes the following remarks on tooth-powder:

"A tooth-powder should possess certain characteristics. It should be antiseptic, cooling, agreeable to taste and smell, and have no injurious action on the teeth. After use, it should leave the teeth white, and a sensation of freshness and cleanliness in the mouth. As an antiseptic in this connection, nothing can replace *boric acid*. For years I have used the following powder, and can recommend it:

"Boric Acid, finely powd.....	40 grs.
Chlorate of Potassium.....	60 "
Guaiac, powd.....	20 "
Chalk, prepared.....	60 "
Carbonate of Magnesium....	300 "
Oil of Rose.....	1 drop.

"The boric acid in solution gets between the teeth and the edges of the gums, and there it discharges its antiseptic functions. The chlorate and guaiac contribute their quota to the benefit of the gums and mucous membrane generally. The chalk is the insoluble powder to detach the particles of tartar which may be present, and the magnesia the more soluble soft powder which cannot harm the softest enamel."—After *Pharm. Jour.*

Reduction of Ferric Salts.

THE following simple plan is suggested by Mr. A. L. Beebe, of New York: A strip of thin platinum foil, about one inch square, is perforated with pin-holes over its entire surface. It is then bent into the shape of a letter V, and its opposite corners are connected by short pieces of platinum wire, so as to form a sort of basket. In this is placed a piece of amalgamated zinc of convenient size, and the whole is suspended by a stout platinum or silver wire in the bottle containing the solution to be reduced. Another strip of platinum foil, about 1½ inches in size, is then dropped into the bottle in such a way as to lean against the wire supporting the basket and zinc without coming into contact with the latter. Galvanic action at once commences, and hydrogen is evolved in abundance from the surface of the foil, which never becomes amalgamated, as it comes into indirect contact only with the zinc. When the reduction is complete, the platinum basket containing the zinc is removed from the solution, washed in the titrating beaker, and laid aside, all danger of fracturing the beaker being thus avoided. This is specially suitable in the determination of ferric iron by means of permanganate of potassium. —*Chem. and Drugg.*

Two New Sugar-Reactions.

MOLISCH has presented a paper to the Academy of Sciences, at Vienna, in which he reports two new, delicate reactions for sugar.

If a solution of sugar (about eight minima) is mixed with two drops of alcoholic solution of alpha-naphthol containing fifteen to twenty per cent of the latter, and concentrated sulphuric acid afterwards added in excess, on shaking there is immediately produced a deep violet color, and on subsequent addition of water a bluish-violet precipitate. If thymol is used instead of alpha-naphthol, the other conditions remaining the same, the coloration at first produced is vermilion or carmine, and the subsequent precipitate is in reddish-violet flakes.

These reactions occur with most varieties of sugar, for instance: cane-sugar, milk-sugar, grape-sugar, fruit-sugar, and maltose. Their delicacy is greater than that of any other test so far known.

Since the treatment of carbohydrates and glucosides with sulphuric acid results in the eventual production of sugar, the above-mentioned bodies afford the same reaction, either at once or after some time. Some glucosides (as indican) which, when split, furnish only sugar-like substances, but not sugar itself, do not respond to the reaction.

The above color tests are reported to be exceedingly useful for detecting sugar in urine. Normal human urine responds to the reaction very handsomely, and the test is still recognizable even after the urine has been diluted with between one hundred and three hundred volumes of water. This would appear to confirm Brücke's views, who maintains that glucose is a constant constituent of normal human urine.—After *Rundschau* (Prag).

Iodol and Iodol-Gauze.

IODOL, as a substitute for iodoform, does not seem to make much progress in this country. One of the chief objections is its high price. The other is, that it is by no means as stable as iodoform.

An iodol-gauze has recently been recommended to be prepared with the following solution:

Iodol.....	1 part.
Rosin.....	1 "
Glycerin.....	1 "
Alcohol.....	10 parts.

*Brit. Pharm., that is alcohol of spec. gr. 0.885, containing 88.76% of absolute alcohol by volume.

A SIMPLE EXTRACTION-APPARATUS.

A SIMPLE apparatus for continuous extraction is recommended by Barthel. *A* is the extraction tube; *d* is an open thin-walled glass tube serving as an upright condenser, and *a b* is a glass tube which serves to convey the vapors of the boiling liquid in the flask (not shown in the cut) into the extraction tube and thence into the condenser. The curved tube *a b* is in two pieces—to facilitate the fitting together—the point of junction, at *c*, being protected by a piece of rubber tubing. The cork *r* is fitted into a flask in which the volatile liquid is heated, and into which the percolate from the extraction tube runs. When bisulphide of carbon, or other liquids acting upon rubber are used, the piece of rubber tubing at *c* must be replaced by a cork.

When the apparatus is made of larger dimensions, as, for instance, when the extraction tube has a capacity of about 100 C.c., it is better to use three different condensing tubes, instead of one. If these tubes have a length of about 6 feet, no loss of volatile liquid need be feared.—After *Pharm. Centralh.*, 27, 273.

Antiseptics in Pharmacy.

In a recent paper by Dr. A. Poehl, of St. Petersburg, published in *Pharm. Zeit.*, the author discusses the methods at present in use to obtain liquids or solutions, free from bacteria or ferment bodies, for medical or surgical purposes. We quote the more interesting passages:

"The introduction of the salicylates of atropine, eserine [see note at end], etc., is due to these efforts to produce aseptic solutions [in ophthalmic practice], but they were not as successful as might have been expected.

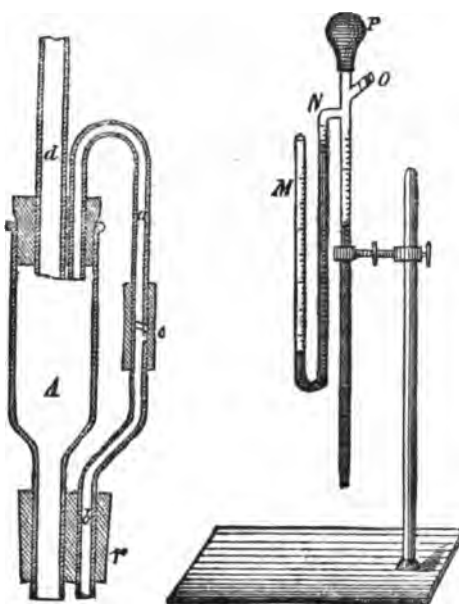
In our days a physician cannot do practice without hypodermics, and these should always be prepared under the precautions afforded by the aseptic method. The preparation of hypodermic injections in the modern pharmacies is accomplished without any antiseptic methods. The very act of filtration through paper causes the filtrate to contain more micro-organisms than the unfiltered liquid contained. To understand this it is only necessary to recall to mind the method by which such paper is prepared. A plain-folded filter, moreover, is even less objectionable than a plaited one, as the latter must be much more manipulated. . . . Dr. Hager has pointed out the dangers of septic hypodermic injections long ago, and has, among other things, recommended the employment of doubly distilled water, that is, such water as, after being once carefully distilled, is freed from all volatile organic matters by being treated with permanganate and then re-distilled.

While this doubly distilled water affords stable solutions of metallic salts, alkaloids require perhaps still further precautions, as they constitute, in themselves, a favorable nutriment for certain micro-organisms. The most effective way to sterilize all such solutions would be to raise them to boiling. But this is impracticable in the case of delicate alkaloids or glucosides, as they would be decomposed. The only rational method, therefore, which can be expected perfectly to accomplish the object, would be that of Tyndall (by discontinuous sterilization).

The addition of antiseptic substances to hypodermic solutions, for the purpose of sterilizing them, is not justifiable from the medical standpoint, although it is often recommended. Free acids, at least, are objectionable under all circumstances, and the presence of an antiseptic substance in quantity sufficient to be effective is by no means immaterial.

In the preparation of absolutely perfect hypodermic injections, therefore, the chief task will consist in most scrupulously applying all cautions requisite for obtaining sterilized liquids, the first condition being an absolutely pure distilled water, and another that no paper filter be used in the preparation. Finally, the finished solution must be sterilized either directly or discontinuously. All this, however, requires the utmost care and a perfect familiarity with the methods to be employed.

[The author gives only brief outlines of the method by which such sterilized solutions may be prepared. As it is evidently not possible for every pharmacist to adopt such methods, he recommends to keep the several hypodermic medicines on hand in form of granules, specially prepared under all possible antiseptic precautions, and containing, each, a known quantity of the remedy. By introducing one (or more of these) into the vial, previously sterilized by heat, and then adding the requisite quantity of pure doubly distilled water from a burette with glass stopper (and closed with cotton), a stable solution may be produced.]



Barthel's extraction apparatus.

Specific gravity apparatus

Finally, the author speaks of the efficacy of certain volatile antiseptics, particularly of chloroform, which he does not object to, as it is soluble in water only to a very small extent, while it is nevertheless capable, even in such high dilution, to prevent the development of bacteria. If to a solution thus rendered proof against bacteria by chloroform, there is further added an antiferment, such as benzaldehyde, cinnamic aldehyde, thymol, styrol, etc., etc., the resulting solution will be generally satisfactory, though it will depend, in each separate case, upon the nature of the substance itself, what kind of preservatives are most suitable.

[NOTE BY ED. AM. DR.—The salicylate of eserine was not introduced, primarily, on account of any supposed anti-fermentative action of the salicylic acid, but simply because the salicylate happens to be the most perfectly crystallized and least hygroscopic salt of eserine or physostigmine. It has indeed been shown that a solution of the sulphate of physostigmine, when kept for some time, is less liable to spoil than a solution of the salicylate kept equally long. But the sulphate is so hygroscopic that it is often impossible to weigh out more than one or two portions out of a fresh vial containing it, without running the risk of giving access to so much moisture as will prevent the remainder from being removed in a dry condition.]

APPARATUS FOR DETERMINING THE SPECIFIC GRAVITY OF LIQUIDS.

AN apparatus for taking the specific gravity of liquids, which is particularly valuable when only small quantities of liquid are available, has been devised by L. Amat.

It consists of a capillary tube *T*, the lower orifice of which is open, while the upper one is provided with a rubber ball. Laterally there are attached to it a small tubulure at *O* and a U-shaped tube *M*, which latter serves as a manometer. The tubes *T* and *M* are divided into millimeters. Supposing now that the manometer tube *M* is half filled with a liquid the specific gravity of which is exactly known, the tubulure at *O* then stoppered, and the pipette tube *T* inserted into the liquid (the specific gravity of which is to be taken), while the rubber ball *P* is slightly compressed. On releasing the pressure, a column of the liquid will ascend the tube *T*, but, at the same time, the standard liquid in the inside manometer tube *N* will rise likewise, the amount of rise depending upon its own gravity and that of the liquid under examination. In other words, the amount of liquid contained in the tube *T* (excepting so much as would naturally be retained at its orifice by capillary attraction) is balanced by the increase of the column of liquid in the inner manometer tube. Now, if we designate by

d, the spec. grav. sought;
a, the height (in millimeters) of the liquid drawn up in *T*;
d', the spec. grav. of the standard liquid in the manometer tube;
b, the difference of level (in millimeters) in the inner leg of the manometer,

then we have:

$$\frac{a}{b} = \frac{d'}{d}; \text{ hence } d = \frac{b}{a} d'.$$

That is, the spec. grav. of the liquid under examination is found by dividing the rise of liquid (in millimeters) of the standard liquid, with the height (in millimeters) of the liquid in *T*, and multiplying the quotient with the spec. grav. of the standard liquid.

If the latter is water, which is generally assumed as 1, then the above formula becomes:

$$d = \frac{b}{a}$$

Owing to the capillarity of the tube *T*, which would retain a small amount of liquid near the point even when open above, it is necessary to make a correction. For this purpose the liquid is allowed to run out (by opening *O*), and the height (in millimeters) of the small column of liquid now retained (which we will designate by *c*) is read off. Consequently the above formula becomes, after correction:

$$d = \frac{b}{a - c}$$

In the apparatus described by the author, *c* amounts to 2-3 millimeters. The exactness of the apparatus depends upon its size and the correct calibration. The author gives figures which show that the second decimal may still be determined with accuracy by the apparatus. For instance, he quotes:

	With above apparatus.	With spec. grav. bottle.
Ether	0.745	0.743
Alcohol	0.813	0.816
Alcohol	0.815	0.816
Sulphuric Acid	1.884	1.886
Sulphuric Acid	1.887	1.886

When making a series of determinations, particularly with one and the same liquid, but of different densities, the above-described apparatus promises to be quite useful and to save much time.—*Bull. Soc. Chim.*, Paris, 45, May 5th.

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EDITORIAL.

THE practice of medicine by druggists was the subject of a prosecution recently in the First District Police Court of New York, the proceedings having been instituted by the Medical Society of the County of New York, through its counsel. The facts as testified to by the witnesses for the prosecution were substantially as follows: A man got a splinter in his foot, and went to a drug-store for relief. The druggist declined to treat the case, and sent him to a doctor. Failing to find the doctor at home, he took the advice of a fellow-workman and went to the store of the defendants, one of whom ridiculed the idea of going to a doctor for such a trouble, examined the foot with a probe, advised festering instead of cutting, and sold the injured man a salve to be applied. This was on Wednesday. On the Friday following, the man visited the store again, and the other partner examined the foot, pronounced the condition of the sore not ripe enough, and advised the salve to be applied more freely. On the Monday following, a third visit was made to the drug-store, and the splinter was extracted with tweezers. The next day, the man's wife went to the store to get something to relieve her husband's suffering, and was told that her husband probably had erysipelas, and was sold a wash to be applied to the foot. On Wednesday—one week from the receipt of the injury—a physician was called to attend the case.

The defendants, on the other hand,

testified that they did not apply salve with their own hands, or advise treatment. They also testified that the injured man asked for "a salve or something," and that the wife made her own choice of lotions.

The case was tried before a jury, and a verdict was rendered for the defendants.

We have given this short account of the case for the purpose of drawing a comparison between the course pursued by the two druggists. The first declined to have anything to do with the case, and suffered no further annoyance than the loss of a customer. The others, in order to sell forty cents' worth of medicine, placed themselves in the position of becoming liable for infringement of the law governing the practice of medicine, and were subjected to the annoyance and costs of defending themselves in a suit brought about through the efforts of the County Medical Society; to say nothing of gaining (whether justly or unjustly) a reputation among the physicians in their neighborhood for being "counter prescribers." Does it pay?

Action of German Physicians and Pharmacists Against Secret Remedies.

THE Medical Society of the district of Leipzig, and the Association of Pharmacists of Leipzig and surrounding districts, have recently held a convention for the purpose of taking some action against the spread or encouragement of secret remedies, and have adopted the following regulations:

1. It is the business of physicians to cure the sick; that of the pharmacists to prepare the medicines.

2. a. The physicians pledge themselves not to recommend any secret remedies to their patients.

b. The pharmacists agree not to issue any announcements or bombastic advertisements of secret remedies, nor to attach their own or their firm name to such as mention the diseases or complaints the remedy is supposed to cure.

3. The patronage given by physicians to wholesale houses is to be antagonized in every possible way, as being opposed to the public interest.

It will be seen from these resolutions that, in spite of the supposed government supervision of the matters relating to medicine and pharmacy, our German confrères are no better off in this respect than we are on this side of the Atlantic. In fact, for a number of years past, there has been an evident tendency on the part of many German physicians to patronize certain proprietary articles, or to make propaganda for the products of certain manufacturers. This country has often been held up to ridicule because it was said that almost anything in the shape of a nostrum could find medical sponsors to vouch for its superior quality. To a certain extent this may have been true, but on examination it will be found that almost every one of these medical backers belongs to the class of nobodies. The names of recog-

nized authorities, or of reputable practitioners, are met with under similar circumstances with much greater rarity. Impartial observers must have noticed that this proportion or relation in the character of medical supporters is decidedly different in Germany, as well as in some other continental countries. We meet there the most prominent and renowned names among the medical profession, even professors at universities, openly and confessedly publishing papers, addresses, circulars, and pamphlets supporting the supposed claims of some special form of medicine, or the preparations of a certain manufacturer, or the management of a certain institution, etc. In fact, quite a number of these documents bear the evident stamp of an advertising dodge.

However, this is a subject which deserves a much fuller treatment than can be given to it here. It has been incidentally mentioned, because the prevalence of the evil, and the consequent necessity of trying to suppress it, is shown by the fact that the second of the above-quoted resolutions (2, a) has been adopted by a joint convention of German physicians and pharmacists.

The Carlsbad Mineral-Water Lease.

IN response to their advertisement soliciting tenders for the lease of the Carlsbad mineral springs, the local authorities have received eight applications, one of which, however, is debarred from competition through arriving after the appointed time. Karl Karuth August Boden, and others, at Hamburg, offer an annual rent of 126,500 fl.; A. M. Pick, of Prague, 120,000 fl. per annum, plus 50 per cent of the net profits; Julius Prince, of the London Apollinaris Company, 150,000 fl. per annum, and 575,000 fl. for advertising during fifteen years; Heinrich Mattoni, of Carlsbad, 120,000 fl. per annum; Louis Pacully and Samuel Wernersen, of Breslau, 150,000 fl. per annum; Julius Schottlaender, of Breslau (the representative of the firm Loebel Schottlaender, the present lessees), 175,000 fl.; and Eisner and Rosokau, in Philadelphia, 140,000 fl. for the first year, with an annual increase. A decision will shortly be taken. The springs are now leased at 70,000 fl. per annum. — *Chem. and Drugg.*

Zinc Reported in American Dried Apples.

J. STINDER reports (in *Industrieblätter*, 1886, 116) that American sliced and dried apples often contain zinc. This contamination is said to be caused by the preliminary treatment of the peeled apples, which are placed in galvanized (zinc-coated) iron baskets and dipped into salt water, after which they are immediately transferred to the frames of the drying-chambers, the bottoms of which consist of zinc [galvanized iron] wire-gauze. The object of dipping the apples in salt water is to prevent them from becoming yellow or brown. The whiter the apples appear the more necessary it is, according to Stinde, to insure the absence of zinc.

SELECTIONS FROM THE REVISED HOSPITAL FORMULARY

OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION OF THE CITY OF NEW YORK.

(Continued from page 149. *)

[Tonic Mixtures Continued.]

47. *Mistura Strychninae.**Hall's Strychnine Mixture (Modified).*

℞ Strychninae Acetatis.....gr. 1
Tinct. Cardamomi Comp. .fl. dr. 4
Alcohol,
Aque..... āā fl. dr. 2½
Syrupi..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful.

48. *Mistura Tonica (Bell. Hosp.).*

"Special Tonic."

℞ Quininae Sulphatis... gr. 80
Tinct. Nucis Vomicae,
Tinct. Ferri Chloridi... āā ʒ 160
Acidi Phosphor. Dil.....fl. 3 1
Syrupi..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful.

49. *McCann's Tonic.*

℞ Liqueoris Ferri et Quininae Citratis
(U. S. Ph.),
Tinct. Nucis Vomicae... āā fl. dr. 2
Syr. Hypophosphitum.fl. 3 8

Mix.
Dose: A teaspoonful before meals.
(Dr. B. H. McCann.)

50. "Phthisis Tonic" (Bell. Hosp.).

℞ Tinct. Zingiberis.....fl. dr. 1
Sodii Bicarbonatis..... dr. 2
Tinct. Gentian. Comp. q. s. ad fl. 3 5

Dissolve and mix.
Dose: A teaspoonful. (Dr. A. L. Loomis.)

51. *Smith's Bitters.*

℞ Tinct. Cinchonae Comp.,
Tinct. Gentianae Comp.,... āā fl. 3 2

Mix.
Dose: A teaspoonful.

52. *Thomson's Tonic.*

℞ Ferri et Ammonii Citratis... gr. 64
Acidi Hydrochlorici..... ʒ 80
Glycerini..... fl. 3 1½
Aque..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful. (Dr. W. H. Thomson.)

53. "Ward Iron" (Char. Hosp.).

℞ Tinct. Ferri Chloridi,
Syrupi..... āā fl. 3 1
Aque..... fl. 3 2

Mix.
Dose: A teaspoonful.

54. "Ward Tonic" (Bell. Hosp.).

℞ Ferri et Quininae Citr.,
Ferri et Strychninae Citr... āā dr. 2
Infusi Calumbae..... fl. 3 16

Dissolve and mix.
Dose: A tablespoonful (containing nearly 1-28th grain of strychnine).

55. "Ward Tonic" (Fothergill's) (Char. Hosp.).

℞ Quininae Sulphatis.....gr. 16
Strychninae Sulphatis... gr. 4
Potassii Citratisgr. 90
Tinct. Ferri Chloridi.....fl. dr. 5
Syrupi..... fl. 3 1
Aque..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful.

56. *Loomis' Tonic* * (Char. Hosp.).

℞ Quininae Sulphatis.....gr. 15
Tinct. Ferri Chloridi.....fl. dr. 2
Spir. Chloroformi.....fl. dr. 8
Aque..... fl. 3 1
Glycerini..... q. s. ad fl. 3 2

Dissolve and mix.
Dose: A teaspoonful.

57. *Mistura Cinchoninae Sulphatis (Bureau O. D. P.).*

℞ Cinchoninae Sulphatis.....gr. 60
Acidi Sulphurici Dil..... q. s.
Aque..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful.

[Note.—This mixture is one of those which are dispensed to a certain class of would-be patients who make the rounds of the different dispensaries, and whose statements are either suspected or known to be exaggerated. There are various devices adopted to entrap such fraudulent pensioners, but each dispensary has its own methods, and it is preferable not only that these should be kept private, but also that they be changed from time to time.]

58. *Mistura Ferri Chloridi (Ins. As.).*

℞ Tinct. Ferri Chloridi,
Tinct. Nucis Vomicae.....fl. 3 1
Syr. Hypophosphitum.....fl. 3 8
Aque..... q. s. ad fl. 3 16

Mix.
Dose: 2 teaspoonfuls three times daily.

59. *Mistura Ferri Composita (Griffith's Mixture, Modified).*

℞ Ferri Sulphatis..... gr. 20
Potassii Carbonatis.gr. 25
Myrrhae,
Sacchari āā dr. 1
Tinct. Lavandulae Comp. .fl. dr. 4
Aque Cinnamomi. q. s. ad fl. 3 8

Dissolve and mix.
Dose: 1 to 2 fluidounces.

Prepare as directed by the U. S. Pharm., 1880. The officinal formule directs Spirit of Lavender. In the practice of the Department, the Compound Tincture of Lavender is generally used.

Note.—If this mixture is to be kept in stock, the sulphate of iron is to be left out, and the remaining mixture made up only to 7½ fl. oz. (or a multiple thereof). When it is to be dispensed, say in quantities of 4 fl. oz., the following proportions are required:

Sulphate of Iron..... gr. 16
Water..... fl. dr. 2

Dissolve and add enough stock mixture to make 4 fl. oz.

60. *Mistura Ferri et Quininae Citratis (Ins. As.).*

℞ Ferri et Quin. Citrat.....dr. 8
Tinct. Nucis Vom.....fl. dr. 5
Syr. Hypophosphitum.....fl. 3 8
Aque..... q. s. ad fl. 3 16

Dissolve and mix.
Dose: A teaspoonful.

61. *Mistura Ferri et Strychninae (Bell. Hosp.).*

℞ Strychninae Sulphatis.....gr. 1
Ferri et Quin. Citrat.....dr. 8
Ferri Pyrophosphat..... dr. 2
Tinct. Gentian. Comp.,
Aque..... āā fl. 3 4

Dissolve and mix.
Dose: 2 teaspoonfuls.

62. *Mistura Pyrophosphatis (Ins. As.).*

℞ Ferri Pyrophosphatis.....gr. 150
Tinct. Nucis Vomicae..... ʒ 200
Hydrargyri Bichloridi.....gr. 1
Tinct. Cinchonae Comp.,
Syrupi..... āā fl. 3 5

Dissolve and mix.
Dose: 2 teaspoonfuls.

Supplement to A.

The following formulæ, which were omitted in our last number for various reasons, are inserted here by request of a number of our readers:

(MIXTURES FOR DISEASES OF THE RESPIRATORY ORGANS.)

63. *Mistura Ammonii Chloridi (Bureau O. D. P.).*

℞ Ammonii Chloridi,
Potassii Chloratis..... āā gr. 80
Syr. Senegae..... fl. dr. 4
Syr. Ipecacuanhae fl. dr. 8
Syr. Tolutani..... fl. dr. 5
Ext. Glycyrrhizae gr. 60
Aque Cinnamomi. q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful, for children.
(Dr. G. H. Bosley.)

64. *Mistura Antasthmatica (Fothergill's).*

℞ Ammonii Iodidi.....gr. 120
Ammonii Bromidi.....gr. 10
Syr. Tolutani..... fl. 3 8
Tinct. Lobeliae..... fl. 3 5

Dissolve and mix.
Dose: A teaspoonful.

65. *Mistura Codeinae Hydrocyanica (Bell. Hosp.).*

℞ Acidi Hydrocyanici dil..... ʒ 16
Codeinae..... gr. 4
Ext. Pruni Virg. Fl..... fl. 3 1
Aque..... q. s. ad fl. 3 2

Dissolve and mix.
Dose: A teaspoonful.

66. *Mistura Extracti Opii (Bell. Hosp.).*

℞ Extracti Opii,
Extr. Belladonnae..... āā gr. 2
Chloroformi Purificati..... ʒ 15
Syrupi..... fl. 3 1
Aque..... q. s. ad fl. 3 2

Dissolve and mix.
Dose: A teaspoonful.

67. *Mistura Hydrobromica.*

℞ Acidi Hydrobromici diluti (10%)... ʒ 30
Spir. Chloroformi ʒ 20
Syr. Scillae..... fl. 3 1
Aque..... q. s. ad fl. 3 1

Mix.
One dose: To be taken twice or thrice daily, for cough.

68. *Spiritus Duo (Char. Hosp.).*

℞ Spir. Aetheris Comp.,
Tinct. Lavand. Comp..... āā part aequ
Mix.
Dose: A teaspoonful.

C. MIXTURES FOR DISEASES OF THE DIGESTIVE ORGANS.

68. *Diarrhoea Mixture (Hart's Isl. Hosp.).*

℞ Tinct. Capsici..... fl. dr. 1
Spir. Menthae Pip..... fl. dr. 2
Tinct. Opii..... fl. dr. 3
Tinct. Catechu Co.,
Tinct. Kino,
Tinct. Krameriae,
Spir. Camphorae,
Aque..... āā fl. dr. 4

Mix.
Dose: 30 to 60 minims.

69. "Diarrhoea Mixture, Loomis."

℞ Tinct. Lavandulae Comp. .fl. 3 2
Tinct. Opii,
Tinct. Rhei..... āā fl. dr. 4
Olei Sassafras..... gtt. 40

Mix.
Dose: A fluidrachm after each movement. Should it fail to act, add tinct. catechu fl. 3 1.

70. "Diarrhoea Mixture, Squibb."

℞ Tinct. Opii,
Tinct. Capsici,
Spir. Camphorae... āā fl. dr. 2
Chloroformi Purificati..... ʒ 45
Alcohol..... q. s. ad fl. dr. 10

* Correction: In the foot-note on page 148, first column, read: Lun. As. = Lunatic Asylum (Blackwell's Island) instead of (Ward's Island).

* The succession of formulæ is not the same in this reprint as in the original. Some of them had been omitted in our last number, and are here inserted as a supplement, by request.

Mix.

Dose: 20 to 40 minims.

Note.—This mixture was originally introduced and is still sold under the title "compound tincture of opium." But it is not advisable to write for it by this name, or by its Latin equivalent, *Tinctura Opii Composita* ("Tr. Opii comp."), since cases have occurred when it was dispensed by mistake for *Tinctura Opii Camphorata* ("Tr. Opii Camph.").

71. "*Diarrhoea Mixture, Velpeau.*"

℞ Tinct. Opii,
Tinct. Catechu,
Spir. Camphoræ.... āā part. æqu.

Mix.

Dose: 30 drops in water after each evacuation. If diarrhoea persists or increases, double the dose.

72. *Guttæ Carminativæ* (Char. Hosp.). "*Hot Drops.*"

℞ Tinct. Opii,
Tinct. Capsici,
Spir. Camphoræ,
Spir. Menthæ Pip.... āā fl. dr. 2
Aque..... q. s. ad fl. 3 1

Mix.

Dose: A teaspoonful.

73. *Mistura Aloes Alkalina.*
Alkaline Mixture of Aloes.

℞ Extr. Aloes Aquosi..... gr. 75
Sodii Bicarbonatis..... 3 14
Spir. Lavandulæ Comp. fl. dr. 4
Aque..... q. s. ad fl. 3 16

Dissolve the extract and the bicarbonate of sodium in 12 fluidounces of water; add the compound spirit of lavender; and finally enough water to make 1 pint, and filter.

Dose: 1 fluidrachm to 1 fluidounce, half an hour after meals, for costiveness.

74. *Mistura Anticholerica.*
"Sun Mixture."

℞ Tinct. Opii,
Tinct. Capsici,
Tinct. Rhei,
Spir. Camphoræ,
Spir. Menthæ Pip.... āā part. æqu.

Mix.

Dose: 20 to 60 minims.

75. *Mistura Antidiarrhoeica* (Bureau O. D. P.).*"Diarrhoea Mixture (Child's)."*

℞ Tinct. Opii,
Spir. Camphoræ..... āā 82
Spir. Menthæ Pip..... 64
Tinct. Catechu Comp. fl. dr. 8
Mist. Cretæ..... q. s. ad fl. 3 2

Mix.

Dose: A teaspoonful. (Dr. G. H. Bosley.)

76. *Mistura Antidysenterica.*
(*Mistura Camphoræ Acida—Hope's Camphor Mixture.*)

℞ Acidi Nitrici..... 60
Tinct. Opii..... 40
Aque Camphoræ, q. s. ad fl. 3 8

Mix.

Dose: A tablespoonful, increased to 1 or 2 fluidounces every three hours, in dysentery.

Note.—The original formula directed "nitrous acid," meaning the impure commercial nitric acid, containing nitrous oxide in solution.

77. *Mistura Anti-emetica* (Char. Hosp.).

℞ Creasoti..... 12
Acidi Hydrocyanici Dil..... 80
Acaciæ pulv.,
Sacchari pulv..... āā dr. 6
Aque..... q. s. ad fl. 3 2

Mix.

Dose: A teaspoonful.

78. *Mistura Gentianæ Alkalina.*

℞ Sodii Bicarbonatis..... gr. 120
Acidi Hydrocyanici Dil..... 24
Infusi Gentianæ Comp..... 3 8

Mix.

Dose: 1 to 1 fluidounce, in gastric intolerance of phthisis, etc.

Note.—Infusum Gentianæ compositum (Brit. Pharm.) is prepared by infusing 60 grains each of gentian and bitter orange peel, and 115 grains of fresh lemon peel, all properly sliced or cut, in 10 fluidounces (U. S. measure) of boiling water, and straining after one hour.

79. *Mistura Naphthalini* (Bell. Hosp.).
Naphthalin Diarrhoea Mixture.

℞ Naphthalini Recryst..... gr. 320
Tinct. Capsici..... gtt. 16
Olei Menthæ Pip..... gtt. 2
Alcohol,
Mucilag. Acaciæ..... āā fl. 3 1

Dissolve the naphthalin in the alcohol; add the tincture and oil; and lastly, mix with the mucilage. Shake the mixture well before dispensing.

Dose: 2 fluidrachms.

Note.—Commercial naphthalin is not pure enough for internal administration. Only the recrystallized naphthalin should be used.

80. *Mistura Olei Ricini* (Bureau O. D. P.).

℞ Olei Ricini,
Syrupi Acaciæ,
Syr. Ipecac.,
Tinct. Opii Camph..... āā fl. dr. 2

Mix.

Dose: A teaspoonful. (Dr. J. E. Winterson.)

81. *Mistura Opii, Rhei et Camphoræ* (Bureau O. D. P.).

℞ Tinct. Opii,
Tinct. Rhei Aromat.,
Spir. Camphoræ..... āā fl. dr. 4
Tinct. Cardam. Comp..... fl. dr. 2
Aque Anisi..... q. s. ad fl. 3 4

Mix.

Dose: A teaspoonful for children, in diarrhoea. (Dr. G. H. Swezey.)

82. *Mistura Rhei Composita.*

℞ Ext. Rhei Fl..... 16
Ext. Ipecac Fl..... 8
Sodii Bicarbonatis..... gr. 82
Glycerini..... fl. dr. 6
Aque Menthæ Pip..... fl. 3 2

Mix.

Dose: 1 to 1 teaspoonful, 2 or 3 times a day, for children. (Dr. E. R. Squibb.)

83. *Mistura Rhei et Calcis* (Bureau O. D. P.).

℞ Tinct. Opii Camphor.,
Syr. Rhei Aromat. . . āā fl. dr. 4
Liquoris Calcis..... fl. 3 2

Mix.

Dose: A teaspoonful for children, in diarrhoea. (Dr. W. H. Ackerman.)

84. *Mistura Rhei et Sodæ* (I.) (Bell. Hosp.).

℞ Sodii Bicarbonatis..... gr. 60
Rhei pulv..... dr. 4
Spir. Menthæ Pip..... fl. dr. 2
Aque..... q. s. ad fl. 3 4

Mix.

Dose: A teaspoonful.

Note.—The official *Mist. Rhei et Sodæ* is also prescribed. See the succeeding formula.

85. *Mistura Rhei et Sodæ* (II.) (Bureau O. D. P.).

℞ Sodii Bicarbonatis..... gr. 60
Extr. Rhei Fl.,
Spir. Menthæ Pip..... āā fl. dr. 1
Aque..... q. s. ad fl. 3 4

Mix.

Dose: A teaspoonful.

Note.—This is practically identical with the official preparation.

86. *Mistura Sodæ et Menthæ.*
"Soda Mint."

℞ Sodii Bicarbonatis..... gr. 80
Spir. Ammon. Arom..... 15
Aque Menthæ Vir..... fl. fl. 4

Dissolve and filter.

Dose: A tablespoonful.

87. *Mistura Sodii Bicarbonatis* (Bureau O. D. P.).

℞ Sodii Bicarbonatis..... 3 1
Tinct. Zingiberis..... fl. dr. 2
Tinct. Gentian. Comp..... fl. 3 1
Aque..... fl. 3 5

Dissolve and mix.

Dose: Two teaspoonfuls.

88. *Mistura Stomachica* (Bell. Hosp.).

℞ Tinct. Nucis Vomicae,
Tinct. Capsici..... āā fl. dr. 1
Tinct. Cinchon. Comp.,
Tinct. Gentian. Comp..... āā fl. 3 1

Mix.

Dose: A teaspoonful before meals.

89. *Mistura Sulpho-Alkalina* (Bureau O. D. P.).

℞ Sulphuris Loti,
Potassii Bitartratis,
Sodii Bicarbonatis,
Potassii et Sodii Tartr. āā part. æqu.

Mix.

Dose: A tablespoonful, mixed with sweetened water. (Dr. E. A. Maxwell.)

90. *Mistura Tœnicida* (Schafhirt's) (Bell. Hosp.).

℞ Granati (Rad. Cort.)..... 3 4
Peponis..... 3 1
Oleoresinæ Aspidii..... fl. dr. 2
Ergotæ Pulv..... dr. 4
Acaciæ Pulv..... dr. 2
Olei Tigllii..... gtt. 2
Water..... q. s.

Bruise the pomegranate-root bark and the pumpkin seed, and boil in 8 fluidounces of water for 15 minutes; then strain. Rub the crotonoil with the oleoresin of aspidium, the powdered ergot and acacia, and add to this the decoction.

Administration: Give a saline cathartic the night before, direct the patient to eat no breakfast, and at 10 A.M. administer the above mixture as one dose.

91. "*Ward Cathartic*" (Char. Hosp.).

℞ Magnesii Sulphatis..... 3 1
Syrupi..... fl. 3 2
Aque..... q. s. ad fl. 3 4

Mix.

Dose: 1 to 2 fluidounces.

92. "*West's Mixture.*"

℞ Olei Ricini..... fl. dr. 2
Acaciæ Pulv.,
Sacchari Pulv..... āā dr. 2
Tinct. Opii..... 24
Aque Cinnamomi..... fl. 3 4

Dissolve and mix.

Dose: A teaspoonful, for children, in diarrhoea.

D. MIXTURES FOR DISEASES OF THE NERVOUS SYSTEM.

93. "*Delirium Mixture.*"

℞ Potassii Bromidi..... dr. 2
Tinct. Lupulini,
Tinct. Digitalis..... āā fl. dr. 2
Tinct. Valerian. Ammon. fl. dr. 4
Aque..... q. s. ad fl. 3 2

Dissolve and mix.

Dose: A teaspoonful.

94. *Mistura Anti-Epileptica.*

℞ Sodii Bromidi,
Potassii Bromidi,
Ammonii Bromidi..... āā dr. 3
Potassii Iodidi,
Ammonii Iodidi..... āā dr. 14
Ammonii Carbonatis..... dr. 1
Tinct. Calumbæ..... fl. 3 14
Aque..... q. s. ad fl. 3 8

Dissolve and mix.
Dose: 1½ fluidrachms before meals, and 3 fluidrachms at bed-time. (Dr. Brown-Séquard.)

95. *Mistura Chloral et Potassii Bromidi.*

R Chloral..... gr. 80
Potassii Bromidi..... gr. 160
Syrupi..... fl. ¾ 1
Aque..... q. s. ad fl. ¾ 2

Dissolve and mix.
Dose: A teaspoonful.
Note.—When bromide of potassium, bromide of ammonium, or similar salts are combined in one mixture with chloral hydrate, no tincture or other liquid containing a notable proportion of alcohol ought to be added, as the chloral hydrate is liable, under certain conditions, to be converted into chloral alcoholate, the solution of which will float upon the solution of the salts.

96. *Mistura Ergotæ Composita.*
(*Ins. As.*)

R Extr. Ergotæ Fl..... m 30
Potassii Bromidi..... gr. 20
Extr. Hyocyami Fl..... m 25
Aque..... q. s. ad fl. ¾ 1

Dissolve and mix.
One dose, three times daily. In maniacal excitement of chronic and recurrent mania.

97. *Mistura Nervina.*
(*Hammond's or Vance's Mixture.*)

R Quinina Sulphatis,
Ferri Pyrophosphatis..... āā dr. 1
Strychnina..... gr. 1
Acidi Phosphorici diluti..... fl. dr. 2
Syrupi Zingiberis..... fl. ¾ 2
Aque..... q. s. ad fl. ¾ 4

Add the pyrophosphate of iron to 1 fluidounce of hot water, and dissolve it by agitation. Mix the sulphate of quinine and the strychnine with the diluted phosphoric acid and the syrup of ginger. Then pour the two solutions together, and add enough water to make the product measure 4 fluidounces.

Dose: A teaspoonful.
Note.—The official phosphoric acid is the tribasic or orthophosphoric acid. This is incompatible with pyrophosphate, and to some extent also with phosphate of iron (both in scales), as it does not dissolve them, or precipitates them when in solution, in form of a gelatinous mass. The kind of acid required for mixtures containing the above salts in solution is the so-called *glacial* acid, which consists chiefly of metaphosphoric acid. For preparing mixtures like the above, a special diluted phosphoric acid should be kept in stock, prepared as follows:

Glacial Phosphoric Acid... ¾ 1
Water, enough to make... fl. ¾ 10

98. *Mistura Phosphori* (Thompson).
Thompson's Solution of Phosphorus.

R Phosphori..... gr. 1
Alcohol Absoluti..... fl. dr. 5
Glycerini..... fl. ¾ 1½
Alcohol..... fl. dr. 2
Spr. Menthae Pip..... m 40

Dissolve the phosphorus in the absolute alcohol with the aid of a gentle heat; then add to it the glycerin, alcohol, and spirit of peppermint, previously mixed and slightly warmed.

Each fluidrachm contains nearly one-twentieth grain of phosphorus.—
DR. J. ASHBURTON THOMPSON.

[To be continued.]

Deodorizing Sulphide of Potassium.

THE disagreeable odor of sulphide of potassium, when used for lotions or baths, may be covered, according to *Pharm. Centralh.*, by combining it with tincture of benzoin, as follows:

Sulphide of Potassium..... 1 part
Tincture Benzoin..... 1 "
Distilled Water..... 100 parts

SELF-FILLING BURETTE.

WE have given several forms of burettes which may be filled by an automatic motion or at least a simple pressure or action of the operator without requiring him to watch the upper level of the liquid. In the accompanying cut we illustrate another form of such a burette, designed by Dr. Dafert. *d* is connected with the reservoir of the test-liquid. By opening the pinch-cock, the liquid will flow into and ascend in the burette until it will run out through *c*, and all excess will flow off through the tube *a* into any suitable vessel that may be set underneath it. In some cases the excess may be allowed to flow back into the stop-bottle; in others, it will be best to throw away the overflowed portion altogether. Any such arrangement is extremely convenient where large numbers of volumetric determinations are to be made with one and the same liquid. It has the only drawback that the upper level is never exactly at the same

mark, and that, therefore, the first half cubic centimeter cannot be read off with absolute accuracy.—*After Chem. Zeit.*

DETERMINING THE MELTING POINT OF FATS.

R. BENSEMANN recommends to employ a melting-tube of the shape shown in the cut. Its lower half is of very narrow diameter, while just above this the tube is slightly enlarged to a bulb. The fat to be examined is introduced into the tube, and, by proper manipulation, caused to congeal in form of a bead in the expanded portion. The tube is then inserted into a water-bath, and the moment

watched when the bead of fat drops off and falls upon the lower portion of the bulb. This is the point of incipient melting.

The following determinations among others, have been made by the author:

	Incipient melting point.	Percentage of water in soluble fatty acids
Imitation Butter (Dutch).	21-23°C.	94.71
Beef-tallow.....	45-46°C.	95.57
Mutton-tallow.....	50-51°C.	95.54
Lard.....	45-46°C.	95.80
Cow's butter.....	34-35°C.	88.14
	34-36°C.	—88-96

—*After Rep. f. Anal. Chem.*

To dye ivory red with fuchsine, dip the object—for instance, a billiard ball—for an instant into nitric acid, wash it with much water, and then immerse it in an alcoholic solution of fuchsine. The color becomes immediately fixed.

The Presence of a Reducing Agent, probably Hydrogen Peroxide, in Natural Water.

ACCORDING to Prof. Ramsay, distilled water, as well as ordinary tap water, has a reducing action on potassium permanganate. The amount of the reducing agent is increased by evaporation, even when all possibility of contamination with solid organic impurity is excluded. The amount of reduction is far too great to be ascribed to the nitrites present in the water. The experiments described in the paper show under what circumstances and to what extent this substance—which is probably hydrogen dioxide—is produced. If this supposition be correct, and the active substance in natural water be really hydrogen peroxide, it becomes of importance to ascertain its action on organic impurities contained in many natural waters.

Experiments were therefore made quantitatively on the action of dilute solutions of peroxide of hydrogen on urea, and it was found that the urea is slowly oxidized on standing; the rate of this action has also been measured. (Comp. H. B. Dixon, *Chem. Soc. Trans.*, 1886, p. 108.)—*Chem. News.*

Smoked Apparatus.

LA NATURE suggests a method of obviating, to some extent, the frequent washings of apparatus which are sometimes requisite in chemical manipulations. It consists in the use of small porcelain capsules that have received a coat of lamp-black by being held in the smoky flame of a candle. A drop of water or aqueous saline solution placed carefully in such a smoked capsule will retain the spheroid form, which is maintained on the addition to this globule of another drop, or a particle of a solid reagent; and allows of any phenomenon of coloration, precipitation, or crystallization being closely observed. At the conclusion of the experiment, the globule may be thrown out of the capsule, leaving it quite clean and ready for another experiment. The carbonaceous coating is, however, attacked by acid, alcoholic, and ethereal liquids, so that the method is only available in the case of certain aqueous solutions. This mode of operation may also be extended to certain leaves which are not wetted by water and some solutions,—a good instance of which is the nasturtium (*Tropæolum*) leaf.—*Pharm. Journ.*

Subchloride of Silver.

It has commonly been supposed that, when chloride of silver is blackened by light, there is produced a lower chloride, the so-called subchloride of silver, and as a second step, metallic silver. Spencer B. Newbury (*Amer. Chem. Journ.*), however, after making experiments tending to test the accuracy of this assumption, has arrived at the conclusion that no subchloride, but only metallic silver is formed under the circumstances. In fact, he demonstrates conclusively that none of the previous observers, who have described subchloride of silver, have had this substance under their hands. It is, therefore, highly probable that the compound has no existence at all.

Wood Oil.

WOOD oil is now made on a large scale in Sweden from the refuse of timber cuttings and forest clearings, and from stumps and roots. Although it cannot well be burned in common lamps on account of the excessive amount of carbon it contains, it furnishes a satisfactory light in lamps specially made for it, and in its natural state is the cheapest of all illuminating oils. Thirty factories produce about 40,000 liters of the oil daily.—*Chem. and Drugg.*

Pure Aconitine.*

HAVING supposed for several years past that we had obtained by Duquesnel's method the pure toxic alkaloid of aconite, in the full quantity in which it exists in the root, we are now shown by Alexander Jürgens that a still purer substance may be obtained by an improved process. According to Jürgens, it is by no means necessary to add tartaric acid to the extracts prepared from the root, since this addition may possibly split up the alkaloid, and the pure alcoholic extract alone possesses already a sufficiently acid reaction. Consequently, the finely powdered root may at once be extracted with four times its weight of alcohol of 90 to 91 per cent. After separation of the green oil, and removal of the fat and portion of the coloring matter, by shaking the acid extract with ether, the aconitoxine (as the pure alkaloid is called) is obtained by rendering the extract alkaline with bicarbonate of sodium, and then shaking with ether—so far agreeing with the process of Duquesnel.

Jürgens, however, reduces the alkaline residue left after the evaporation of the ether to complete dryness, in as perfect a vacuum as possible, and at a temperature not exceeding 60° C. (140° F.). The next step is to add five times its weight of water to the residue, then hydrochloric acid in drops until the reaction just begins to be acid. The liquid is now filtered, whereby the dissolved hydrochlorate of aconitoxine is almost completely freed from a brown resin which accompanies it with extraordinary avidity. At the same time, no loss of alkaloid is experienced, which would be unavoidable if the usual methods of purifying by recrystallization, conversion into a salt, and reprecipitation were followed. On adding bicarbonate of sodium to the aqueous solution of hydrochlorate of aconitine obtained, and shaking it with ether, the alkaloid is obtained in crystalline crusts, having only a yellowish tint. This is next converted into the crystalline hydrobromate, the base again separated from this, and, having been reduced to a fine powder, it is mixed with twice its weight of absolute alcohol, macerated one day and filtered. The residuary alkaloid is once more treated in the same manner with absolute alcohol, and the white crystalline powder finally remaining recrystallized from ether. A considerable portion of the alkaloid originally present—about 10 per cent of the quantity otherwise obtained—may be extracted from the fatty substances that had been separated, by shaking them with acidulated water, rendering the solution alkaline, and shaking with ether. The total yield obtained by Jürgens amounted to 0.2 per cent of pure aconitoxine, while Wright and Luff obtained only 0.03 per cent, that is, only one-sixth or one-seventh of the quantity which Jürgens obtained. The process devised by the latter is, therefore, much more advantageous, particularly as the product is equally pure.

The results of the ultimate analysis prove that the new product is, indeed, of equal purity. Various determinations of nitrogen, as well as the analysis of the double gold salt (which was obtained both in an amorphous and a crystalline condition), led to values which agreed well among themselves, though they differed slightly from the figures obtained by Wright and Luff. According to Jürgens, the alkaloid has the composition $C_{21}H_{27}NO_5$, mol. weight 649. The platinum salt was found to be too unstable to afford accurate analytical results.

Regarding both the base and its salts, Jürgens has considerably extended our knowledge. His statements in respect to the crystalline form of the alkaloid are such that it will hardly be possible to establish a distinction between aconitoxine and any other alkaloid of aconite that may possibly exist. In fact, Jürgens' aconitoxine crystallizes in different forms. From an ethereal solution it is deposited in columnar crystals. If thin layers are evaporated, however, rhombic plates and hexagonal crystals are sometimes formed. Evaporated from chloroform, it is left behind in form of flattened warty crusts; from alcoholic solutions it separates in rather large prisms, sometimes grown together.

It is of particular interest that Jürgens' aconitoxine, when applied to the tongue, produces only the peculiar pricking and numbing sensation characteristic of aconite, while it was entirely free from bitterness. Jürgens found the melting point to be at 179° C. (354° F.) [Duquesnel at 183° C.]. He also confirms the statement that the alkaloid can be precipitated by bicarbonate of sodium; and he further announces that it gives no color reaction with phosphoric acid. The latter is to be attributed to certain impurities, the presence of which is easily accounted for by the existence, in the drug, of a brownish-black resinous body.

Of particular interest are the exact determinations of solubility. Jürgens found them to be as follows:

- 1 in 39.22, for ether of spec. gr. 0.728.
- 1 in 63.90, for ether of sp. gr. 0.720.
- 1 in 37.04, for absolute alcohol.
- 1 in 23.78, for 90% alcohol.
- 1 in 28.06, for petroleum ether of sp. gr. 0.600.
- 1 in 5.50, for benzine.
- 1 in 726.4, for water.

Chloroform dissolves the alkaloid still more easily than benzol, and methyl-alcohol more easily than 90% ethylic alcohol. The pure alkaloid, according to Jürgens, has scarcely any optical properties, polarizing only slightly to the left; on the other hand the aqueous solutions possess this property in an eminent degree.

Of reagents, aqueous solution of iodine is, according to Jürgens, the most delicate, appearing in dilutions as high as 1 in 20,000. It produces a kermes-colored precipitate which, however, disappears after a few hours. Bromine water, iodo-hydrargyrate of potassium, iodide of potassium with iodine, bromide of potassium with bromine, and iodide of potassium and bismuth still produce precipitates in dilutions of 1 in 10,000. Chloride of gold, phosphotungstic and phosphomolybdic acid 1 in 5,000; picric acid 1 in 4,000; tannic acid and nitrite of potassium 1 in 2,000. Pure aconitoxine reduces, according to Hager, neither salts of silver, nor chloride of gold or of platinum. If a few grains of aconitoxine are introduced into a 4-per cent solution of corrosive sublimate in 50% alcohol, and the mixture carefully warmed, the granules are colored yellow, but the color disappears on further heating, and the solution either remains clear or, when much concentrated, yields a white precipitate. No oxide of mercury is separated as in the case of atropine and pseudaconitine.

Detection of Minute Traces of Nitric Acid.

A SOLUTION of pyrogallol is added, and then 10 to 12 drops of concentrated sulphuric acid, so as to form two layers in the test-tube. The presence of nitric acid is indicated by a brown color—or yellow if the quantity is smaller—where the two layers meet. A tenth of a milligramme of nitric acid in a liter of water can be detected with certainty.—O. CURTMAN, in *Zeit. Anal. Chem.* and *J. Chem. Soc.*

[ORIGINAL TRANSLATION.]

The Relative Merits of the Principal Urinary Tests.

PROF. F. PENZOLDT, of the University of Erlangen, has recently issued the second edition of a pamphlet containing a critical review of the principal urinary tests.* As the results obtained by the author are of considerable practical importance, not only for the physician, but also for the pharmacist, who is often called upon to assist the physician in urinary examinations, we shall abstract such portions of the pamphlet as are of especial interest.

I. TESTS FOR SUGAR IN URINE.

Most of the tests for sugar in urine do not furnish the requisite proof that the kind of sugar found is in reality grape-sugar. And those which afford this proof are not sufficiently simple to be rapidly or conveniently used at the bed-side. In using the former, therefore, it must be borne in mind that any positive results do not afford an absolute proof, but merely a high probability that there is glucose present. This is especially the case with the different reduction tests, as well as several others to be mentioned. Whenever these yield a doubtful or indistinct result, it is necessary to have recourse to a more circumstantial, but at the same time more reliable test. Under all circumstances, however, is it necessary to carry out the manipulations strictly in accordance with the directions.

A. Reduction Tests.

1. With Sulphate of Copper and Solution of Potassa (FROMMER'S TEST).

This is probably the one most frequently employed and is performed as follows:

The urine is mixed with about one-third of its volume of official solution of soda or potassa ["official" referring here to the German Pharm., according to which both of these solutions contain about 15% of the alkali—KHO, NaHO—], then a 10% solution of sulphate of copper is added in drops, while shaking, as long as it is completely dissolved, and the whole heated to boiling. If glucose is present, there is formed, long before the liquid boils, a deep yellowish-red precipitate in the upper layer of the liquid. The heating is now stopped, and the reaction rapidly proceeds to the end on its own accord, the result being that cuprous oxide separates, either hydrated, in which case it is yellowish-red, or anhydrous, when it is red. Protracted heating is to be avoided, as this may cause a black coloration, due to the separation of cupric oxide and metallic copper. A mere yellow coloration, or a yellowish precipitate subsequently deposited after the liquid cools, is of no value as a criterion.

Criticism. This test suffers from uncertainty. It is true that, if a copious separation of suboxide takes place under the above-mentioned circumstances already before boiling, the presence of larger quantities of sugar in the urine becomes in the highest degree probable. But when there is little sugar present, the reaction is uncertain because the urine contains also other reducing substances. The same appearances (yellow tint of liquid, etc.) which are observed in presence of only 0.04 to 0.05 per cent of sugar also become manifest in normal urine, if not too dilute. Hence the test is not sharp enough.

2. The Test with Sulphate of Copper and alkaline Solution of Rochelle Salt (FELLING'S TEST).

The method of using this test is too

* From an abstract of the author's paper (published in the *Pharm. Zeitschr. f. Russland*), by Prof. Theod. Husemann, in the *Pharm. Zeitung*, No. 51.

* "Aeltere und neuere Harnproben und ihr praktischer Werth. Kurze Anleitung zur Harnuntersuchung in der Praxis für Aerzte und Studirende." Von Dr. F. Penzoldt, Prof., etc. 8vo, Jena, 1883.

well known to be described here. A modification for qualitative purposes, devised by Worm Müller, which has been thoroughly tested for its reliability, is as follows:

Prepare two test-solutions, namely,

1. Solution of sulphate of copper, containing 2.5% of the salt.

2. Solution of 10 parts of Rochelle salt in 100 parts of 4% solution of soda.

Put 5 C.c. of the urine into one test-tube, and 1 to 3 C.c. of the copper solution, together with 2.5 C.c. of the Rochelle salt solution, into another test-tube, heat both separately and at the same time to boiling, interrupt the boiling in both tubes at the same moment, wait 20 to 25 seconds, then pour the liquids together without shaking. If there is much sugar, cuprous oxide is separated at once; if little is present, a yellowish-green turbidity will make its appearance in a few minutes. If no results are obtained in this manner, the test is repeated with increased quantities (2, 2.5, 3, 3.5, 4 C.c.) of the copper solution.

Criticism. The Rochelle salt solution is intended to prevent the reducing action of creatinin, which interferes when Trommer's test is used. However, whether it succeeds in also preventing the action of other reducing substances (not sugar) is not proven. (For instance, in the presence of pyrocatechin it does not prevent it.) According to Worm Müller, the test indicates as little as 0.1% of sugar. Much experience is required for a correct execution of the test. If it is made with normal urine purposely mixed with 0.1% of sugar, and with a second sample of the same urine, in its natural condition, a slight difference is just barely recognizable. A great deal more difficult is the recognition if only the suspected sample is available. It would, therefore, appear necessary to test the reliability of the test still further. Moreover, it is a little circumstantial if executed as directed above. [The author speaks, of course, of Worm Müller's modified method.] It requires great care, the use of three different pipettes, and frequently one or more repetitions of the test. Yet, if the test is used without pipettes, by mere judgment of the eye (as to quantities), it serves very well as a preliminary criterion in the consultation room or at the bed-side.

3. The Test with Subnitrate of Bismuth (BOETTGER'S TEST).

The urine is heated to boiling, then saturated with soda, a pinch of subnitrate of bismuth added, and the mixture boiled a few minutes. If glucose is present, the liquid, or rather the precipitate, assumes a black color due to suboxide of bismuth. Carbonate of sodium is preferable to caustic soda, since the latter may produce a black color even in normal urine (Salkowski).

[NOTE BY ED. AM. DR.—Boettger's recommendation was to mix 1 vol. of urine with 1 vol. of a solution of carbonate of sodium prepared from 1 part of the crystallized salt and 3 parts of water, then to add a little subnitrate of bismuth, and afterwards to boil. In presence of sugar the bismuth salt is reduced, with production of a black color (which is by some supposed to be due to metallic bismuth).

Neubauer and Vogel (*Analyse des Harns*, 8te Aufl., p. 162) append the following note to this reaction:

If caustic soda or potassa are used instead of the carbonate, the reaction proceeds more rapidly. It succeeds still better, if, instead of the insoluble subnitrate of bismuth, there is added a solution of a bismuth salt (such as nitrate of bismuth, iodide of bismuth and potassium, etc.), so that there is produced a moderate quantity of hydrated oxide of bismuth. On heating the liquid, this precipitate dissolves, and on boiling, after the liquid has already acquired a brown color, the

black precipitate separates suddenly throughout the whole volume of the liquid.]

A recent modification of this method, proposed by Nylander,* is very advantageous. It is as follows:

Prepare a solution of 2.5 parts of nitrate of bismuth, 4 parts of Rochelle salt, and 100 parts of solution of caustic soda of 8% NaHO. To every 1 part of urine add 10 parts of the above solution and boil a short time. After a few minutes (even in presence of only traces of sugar) the liquid and the precipitate (phosphates) will acquire a black color.

Criticism. The ordinary Böttger's test [not Böttcher, as the author writes] has no advantage over that of Trommer. But Nylander's modification deserves attention. It seems to afford certainty up to a certain degree. Only in presence of albumin the black color is a little uncertain, owing to the possible formation of sulphide of bismuth. In normal urine it produces no result in by far the largest number of cases. Regarding the exceptions observed by Nylander, and also the author, the former believes that they may indeed be attributed to a minute quantity of sugar. There is no doubt that the test is very searching. As little as 0.1% of sugar is still very plainly detected, and this limit is perfectly sufficient in practice. Regarding handiness and convenience, the test leaves scarcely anything to be desired.

(To be continued.)

The Tests of Albumin in Urine.

SOME time ago the Clinical Society of London appointed a committee of investigation to report upon the merits of the different tests for albumin in urine. The following abstract of the results obtained by the committee is taken from the *Brit. Med. Journ.* and *Chem. and Drugg.*:

The Committee experimented with artificial admixtures of albuminous bodies in fluids other than urine, which need not here be particularized. The general conclusion obtained from these preliminary experiments was that solution of potassio-mercuric iodide with citric acid, particularly when used after Heller's method, gives the most delicate and clearly marked reactions; and that nitric acid is, for use in the consulting-room, not inferior to any but the potassio-mercuric iodide test; its use in the two ways indicated above being taken into comparative consideration with the other tests correspondingly applied. By the use of different reagents, the Committee were able to distinguish some forms of albuminous bodies from some other states or forms; for instance, peptones from egg-albumin, or serum-albumin, or the albumin of albuminuria.

As regards the clinical use of the tests above enumerated, the committee arrived at the following conclusions.

1. OF DR. OLIVER'S TEST-PAPERS, the potassio-mercuric iodide give the most delicate reactions of all the papers, and excel nitric acid, however applied. The ferrocyanide papers come next, but with a decided interval, and the tungstate papers third; whilst the picric-acid papers are less satisfactory, as an inconvenient quantity has to be used. The two first-named papers require the use of citric acid in the cold, which involves a possible fallacy, in that citric acid produces a precipitate when an excess of soluble urate is present in the urine. Urine of high specific gravity should consequently be diluted, to avoid this source of error; and sufficient acid must be added to render neutral or alkaline urine distinctly acid. The potassio-mercuric iodide papers appear to precipitate all albumins indiscriminately; but the precipitates with artificial peptones are dissolved on heating, and reappear

on cooling. The ferrocyanide papers do not precipitate artificial peptones; while their reaction with other albumins is keen.*

2. DR. PAVY'S PELLETS of nitric acid and ferrocyanide of potassium are reported to give as good results as the potassio-mercuric papers of Dr. Oliver (neither of these reagents being quite so searching as the solution of the potassio-mercuric iodide). They are stated not to precipitate peptones; and, therefore, in conjunction with the iodide solution, they may distinguish the two kinds of proteid, and, so far, help in the clinical analysis of pathological conditions. In using this test, citric acid has to be first added; and this source of fallacy must be avoided by dilution, where the specific gravity of the urine is high. Bubbles of gas, which the pellets sometimes liberate, must also be distinguished from a precipitate.

3. DR. JOHNSON'S PICRIC-ACID SOLUTION requires decided excess of the reagent, or the addition of acetic or citric acid. It is reported to be most useful, giving reactions only second to those of the potassio-mercuric iodide solution. The mixture of picric acid and urine should be boiled. Artificial peptones are thrown down by this test in the cold, but disappear upon boiling, and reappear as a cloud on cooling. The picric-acid solution should be dropped into the tube of urine, held vertically, in such a way that each drop falls upon the centre of the surface of the urine so as to obtain differentiation by the production of a film around it, if albumin be present. This cannot be managed if the solution be poured down the side of the tube, as the picric-acid solution is of low specific gravity, and highly diffusible. This gives a precipitate, not necessarily albumin, in the urines of persons taking quinine. The precipitate is distinguished by its being soluble on boiling, to reappear in a crystalline form on cooling; whilst it gives the quinine reaction with chlorine water. This test also precipitates uric acid in the cold; but this cloud disappears under heat.

4. ROBERTS' BRINE TEST is stated to be sensitive, and very trustworthy, though not quite so delicate as the other tests. It does not precipitate peptones or quinine; and it is said to allow the discrimination of mucus from albumin, the cloud of the former being superimposed upon the albuminous cloud.

5. PICRIC-ACID BRINE can be used after Heller's method, which is not possible with picric-acid solution alone owing to its low specific gravity; it gives good results.

6. POTASSIO-MERCURIC IODIDE SOLUTION, with addition of acetic acid, is the most delicate test in the list.

7. NITRIC ACID, USED BY HELLER'S METHOD, and added cautiously, in a somewhat diluted state, to urine just boiled, is declared to be a test of great delicacy, and to be liable to fewer fallacies than the other tests considered. The drawback to this test is its difficult portability.

8. ACETIC ACID, added so as to insure a decided acid reaction to urine just be fore, or immediately after boiling, is a delicate test.

* One apparent fallacy that might occur in the use of Dr. Oliver's papers is not noticed in the report. It happened to us once, in employing an iodide paper to test some serum drawn from a hydrocele, to find that the paper gave apparently no reaction, whereas the liquid, when boiled in another tube, became quite solid. Upon taking a paper from the first portion of the liquid, however, and examining it more carefully, it was found to be coated completely with a thick layer of solid albumin, which had apparently prevented any further egress of the salt from the paper into the liquid around, in that way frustrating all further reaction. The very sensitiveness of the test induced a belief in its failure. When, however, the serum was well diluted with water, the albuminous nature of the liquid was at once completely demonstrated by the paper. It is, perhaps, possible that the same thing might occur in a specimen of extremely albuminous urine.—Ed. *British Medical Journal*.

The report states of mucin, that it is precipitated by most of the reagents which precipitate albumin. The distinction of the two clouds, when formed by Roberts' brine test, has been already noticed; the same kind of indication is given with nitric acid, in Heller's method. With regard to the other tests, mucin cloudiness thereby obtained shows less ready sedimentation than albumin cloudiness, and exhibits a marked mobile satiny appearance of the precipitate when shaken in a good light. In some urines, the potassio mercuric iodide and picric-acid tests produce a precipitate apparently albuminous, when nitric acid affords no such indication.

Finally, the committee think all the tests are valuable practical aids in diagnosis; that some are especially portable, and capable of application without the use of cumbersome apparatus; and that each test has a usefulness of its own. The committee consider that any one devoting himself to the thorough use of one of the tests will find it sufficiently precise for all practical needs, and that, by comparative use of several tests, the discrimination of differing forms of proteids may be obtained. The picric-acid test, which admirably detects albumin and peptones, if boiled with caustic potash, detects also the presence of sugar. The committee lastly note that the knowledge of the reaction of albumin is at present imperfect, and, possibly, capable of much improvement. But to the settlement of this question their functions did not extend.

The points, however, which were delegated to the committee for inquiry are of great practical importance to almost all classes of practitioners, and have, apparently, received a calm judicial investigation. For their labors and this report, which Dr. Ord presented on behalf of the committee, the members will receive appreciative thanks.

The subject of testing for albumin was, many years ago, considered to be settled on a fairly satisfactory basis; and those practitioners who then learned to use heat and nitric acid skilfully have, according to this report, no reason to be mistrustful of those tests. But the appearance, during recent years, one by one, of several other methods of testing, each claimed by its introducer to public favor as the "best on record," has tended rather to shake men's confidence in the tests with which formerly they had been quite satisfied. This report, happily, will go far to reassure practitioners of the excellence of those methods for ordinary laboratory work.

The Purification of Water by Alum.*

THERE is no subject which gives the manufacturer greater anxiety at times than the water which he is using in the works. Even where he is so lucky as to be located on the banks of some clear and sparkling brook, and hence is free from many of the troubles known to his less fortunate brethren, his brook may not seldom get into a troubled state and refuse to be clarified of its suspended clay and other matters by an ordinary process available to him. In no industry is this vexation from dirty water greater than in dyeing. Hence it is a matter of great importance, meaning a saving of hundreds, and sometimes thousands of dollars, to have a simple means of clearing water so that it can be used in ordinary manufacturing processes, and yet not in any way injure the properties of the water for subsequent use.

For large works which use water requiring continual purification, some

constant process should be employed, as the Hyatt filter for instance. . . .

In late years an extensive use has been made of alum in the many processes of purifying water, sewage, etc. It is not improbable that, aside from its effect in precipitating matter mechanically by envelopment within the precipitating basic aluminic sulphate, the alum exerts a distinct coagulative action on the albuminous substances in the water, rendering them insoluble, and thus causing their precipitation; perhaps the same or similar effect that alum produces in the tanning of leather.

Alum has the great advantage that it is cheap, can be obtained everywhere, and is not highly poisonous. Thirty grains can be given at a dose, and the dose repeated four times a day without danger. Then again it has another very great argument in its favor, and that is its cheapness.

To get practical results from the purification by alum, it is evident that it must be added in very small amounts. The amount of alum used by Jeunet seemed to be unnecessarily high. . . .

Sixteen galls. of the city water were treated with 31 grs. of alum, and the whole allowed to stand. After forty-eight hours the precipitation seemed complete, and the bottom of the vessel was covered with a brownish, slimy deposit. This substance, after being dried, gave 59.28 per cent of ash which contained silica and alumina in relatively large amounts.

The clear water gave no reaction for alumina, showing that there was no free alum in solution.

The addition of more alum to the water failed to produce any further precipitation, showing that all the matter precipitable by alum had been thrown down.

It may hence be inferred that the addition of two grains of alum to a gallon of water will clarify it by standing. Some waters may require less, and some may require a longer standing than forty-eight hours, but this is a matter very easily determined for any particular case which may arise.

The water, after precipitation has taken place, is perfectly clear and sparkling, and has neither taste nor smell imparted to it. For use in the dye-house there can be no possible objection made to it. The most practical way of applying this method in clarifying water for use in manufacturing, where filters are not used, will be as follows: Two vats or hogsheds, or similar deep tanks, are filled with the water and treated with alum at the rate of half an ounce of alum for every one hundred gallons of water. The alum should be dissolved in a little hot water, so that it can be mixed with the large bulk of water without difficulty. The mixing can be done with a long-handled dyers' stirrer. A few minutes' stirring will suffice to mix the alum and the water very thoroughly. After the mixing has been done, the water should be allowed to stand undisturbed for forty-eight hours, or until the water clarifies, which can be easily seen by its appearance. If the clarification takes place in less time, so much the better. The water is now racked off for use. When the vat has been emptied to as low a level as is possible without disturbing the sediment, the plug in the bottom should be knocked out, and the vat cleaned out with a strong jet of water. The slimy deposit is easily dislodged and washed away by a stream of water. While one reservoir is thus being used, the other is full of water precipitating, so that the supply is continuous. The best means of drawing the water from the tanks without disturbing the sediment is about as follows: The pipe should enter the side of the vat and pass to the middle, and there be bent upwards

so as to end about a foot above the bottom of the vat. The water is thus drawn downward, and no agitating of the bottom is produced. If the pipe is turned toward the bottom of the vat, the current of water will disturb the sediment.

I think that this method will be found of very great value to many works which now have trouble with their water in the rainy season, and I can call to mind offhand several which could use it to advantage. A few trials with the beautifully clear water produced by the alum treatment will make the hands feel loth to go back to the natural water even at its best. I am quite certain that many streams not now available to the manufacturer can be made so by this treatment.

Stannous Chloride (Protochloride of Tin) as a Disinfectant.

THE use of stannous chloride as a disinfectant has been recommended by Dr. Abbot (*Med. Chron.*, June, p. 252) on the ground that it is cheap, tolerably safe, and does not corrode lead pipes. It is said to be considerably more active than zinc chloride, copper sulphate, zinc sulphate, or ferric sulphate, spores being killed after exposure to a one-per-cent solution for two hours. When required to be kept for any length of time, in order to prevent the formation of the insoluble oxychloride, it should be mixed with an equal quantity of ammonium chloride.—*Pharm. Journ.*

Vanillin.

THE physiological action of vanillin has been studied by Mr. Grasset, of Montpelier, who finds that it acts as a convulsive agent on the lower animals, causing epileptiform movements. It is, however, difficult to determine its toxic action on human beings, since as much as 10 or 15 grammes (155 to 230 grains) have been administered without noxious results. It is probable, therefore, that vanillin only acts injuriously in cases of idiosyncrasy. Indeed, Dr. Grasset suggests its use as a stimulant of an excitomotor character in atonic dyspepsia, etc. The symptoms produced on the lower animals were found to be relieved by the subsequent administration of chloral.—*Pharm. Journ.*, July 31st.

Note on Ichthyol.

EDWARD A. ANDREWS reports in the *Pharm. Journ.* that he had been requested to make some experiments with ichthyol, in order to ascertain the best mode of application, and also to try to disguise the odor.

To attain this latter object, he tried several of the essential oils; the one that appeared to answer best was oil of lavender, 6 drops of this being sufficient to disguise the odor of 1 drachm of ichthyol.

He also found ichthyol to be miscible with water, glycerin, and vaseline in all proportions; oil of turpentine also mixes with it fairly well at first, but after standing some time the mixture separates into two strata, the lower one having an oily appearance and the color of ichthyol; these mix again on agitation.

About 50 minims of alcohol can be mixed with 1 drachm of ichthyol; if more spirit is used, the ichthyol will coagulate.

A plaster was made from the following ingredients:

Ichthyol.....	4 parts.
Lead Plaster.....	2 "
Resin Plaster.....	2 "

The preparation mostly in use, however, was an ointment prepared from:

Ichthyol.....	1 part.
Vaseline.....	1 "

* Abstract of a paper by Prof. Peter T. Austen, Ph.D., in *Textile Colorist and Chem. News*.

Californian Honey.

AN American correspondent of the *Chem. and Drugg.* writes that the Californian honey crop of the season just terminated has been a very small one, and does not exceed two-thirds of the yield in 1884, which, for quantity, was about the best on record in that State. It is thought that the short crop is to some extent accounted for by overstocking, for in riding through the valleys and canyons of the bee-keeping region one passes a continual succession of "bee ranches," so close together that it seems a wonder where flowers are to be found in sufficient quantity to supply the bees with nectar. Some of the most successful bee-men of the State think that at least three miles should intervene between any two bee ranches, and that less than this will not allow sufficient range for the bees even in seasons as prolific of bloom as has been the present one. It is certainly remarkable that in San Bernardino county, where this theory obtains, no complaint has been noticed of any shortness of the honey yield.

Approximate Estimation of Carbolic Acid Solutions.

PROFESSOR MATTHEW HAY (Aberdeen University) suggests (*Lancet*, p. 243) a simple means for distinguishing the 1-in-20 solution of carbolic acid from the 1-in-40. Both solutions are extensively employed in surgery, and the stronger solution may be hurtful, the weaker useless, in different cases; hence the usefulness of a simple test which may be applied readily and with little trouble. The test depends upon the fact that when a five-per-cent aqueous solution of carbolic acid is mixed with an equal volume of saturated solution of common salt at the ordinary temperature, an opaque mixture is formed, due to part of the carbolic acid being thrown out of solution. It is advisable to add the acid solution to the salt solution, and if this be done (for the sake of experiment) drop by drop, it will be observed "that each drop produces a small white cloud of separated carbolic acid, which disappears at once with a single shake of the test-tube until the carbolic solution added is equal to about one-fourth part of the salt solution, when the separated acid no longer disappears on shaking. With every further addition of the carbolic solution the amount of separated acid increases, the fluid meanwhile becoming more and more opaque. The density is greatest when from three-fourth to four-fifth parts of the carbolic solution have been added to one part of the salt solution. With further addition of the solution the acid begins to be redissolved and the milkiness to disappear, and the mixture becomes almost perfectly transparent when about two parts of the solution have been added." The reaction necessary varies with temperature, a clear mixture being formed at 74° F., similarly with lower temperature somewhat weaker solutions give the same cloudiness. A 1-in-40 solution gives a clear mixture with an equal volume of the salt solution. The test is rendered more sensitive by making the salt solution with water containing one per cent of carbolic acid. Such a solution gives a cloudy mixture with carbolic acid solution of three and one-half per cent strength, and with solutions stronger than four and one-half per cent it gives cloudiness, even though the temperature be as high as 93° F. Further, a crystal of common salt will precipitate carbolic acid from a saturated (seven and one-half per cent) solution. As to liquid carbolic acid containing ten per cent of water, Professor Hay says: "It happens frequently that, for convenience, chemists prepare the carbolic

solutions from liquid carbolic acid, and at least one of the best-known makers of the acid states on the label affixed to the bottle that, in dispensing the acid, the water may be disregarded. If chemists follow this instruction, and a five-per-cent solution be prepared by weight, it will contain only 4.5 per cent of pure acid, and will therefore not give the above reaction. If it be prepared by volume, as is likely in many cases, then, as the specific gravity of the liquid carbolic acid is greater than that of water, being about 1.068 (he found one specimen of Calvert's to be 1.070), a solution of greater strength is obtained, containing about 4.82 per cent of acid, and therefore of sufficient concentration to give the reaction. It is thus quite easy to distinguish by means of the reaction carbolic solutions made from liquid and from crystalline carbolic acid, if both have been made by weight."—*Chem. and Drugg.*

Salol.

THIS new antiseptic and antipyretic is a phenyl ether of salicylic acid ($\text{HC}_6\text{H}_4\text{O}_2$), the radicle phenyl (C_6H_5) replacing a hydrogen atom of the acid, thus giving $\text{C}_6\text{H}_5\text{C}_6\text{H}_4\text{O}_2$, or more correctly $\text{C}_6\text{H}_5(\text{OH})\text{COO.C}_6\text{H}_5$. Since its introduction, a short time ago, its action has been further investigated by Dr. Sahli, of Berne, and also by Prof. Löwenthal, who communicates a paper on the subject to the *Semaine Médicale*. It is well known that salicylic acid and its salts produce many untoward effects when administered internally, which greatly militate against their undoubted value in the treatment of acute rheumatism, and many chemists and therapeutists have long aimed at producing a substance which will possess the better properties of salicylic acid, especially its power of warding off endocarditis, without its liability to produce secondary effects. It would appear from experiments which have been made, although they are yet imperfect, that salol is such a substance. As already stated, it is a white crystalline powder, of feebly aromatic odor (recalling oil of wintergreen) and almost tasteless. Merck states that it can also be obtained in rhombic crystals, melting at 42° C. to a clear, colorless liquid, which can be cooled much below that point without solidifying, unless it be touched with a glass rod. Its freedom from taste appears to be due to its insolubility in water; it dissolves, however, perfectly and rapidly in alcohol, benzol, and ether.

Salol has been administered in doses up to eight grammes (3ij.) per day, without bad results, and noise in the ears has been seldom observed. The dose, however, must be modified to the case, just as that of salicylic acid is; for example, in phthisical cases doses of 0.5 gramme should be used at first, because it is undesirable in these cases to lower the temperature too quickly. It is supposed that salol is unaffected in its passage through the stomach, and that it is not decomposed until it reaches the duodenum and is acted upon by the pancreatic secretion. Certainly its administration is not followed by toxic symptoms, such as would be expected by rapid absorption of phenol by the stomach. When treated with pancreatic extract, the body is resolved into its component parts; moreover, it acts as well when administered *per rectum*. The urine of patients is found to be almost black in color, due to the presence of oxidation products of phenol, consequent on the absorption of phenol products into the blood, and subsequent oxidation of these during circulation.

Salol may be applied externally as a dusting powder. Its insoluble nature makes it peculiarly applicable for this purpose, and it has been used with benefit for excoriated surfaces and

foetid wounds. It prevents the development of bacteria, but does not kill them. As a mouth wash and as an injection it is used in solution with alcohol and water, but for the latter purpose it is more desirable to suspend the finely-powdered salol in water with tragacanth or starch mucilage.

The reaction of the body with pancreatin may advantageously be employed as a test for its identity.

Dry Oleate of Quinine.

R. ROTHER recommends (in the *Drugg. Circ.*) to prepare this compound as follows:

Quinine, anhydrous . . . 324 parts.
Oleic acid 282 "
Alcohol.
Water of each sufficient.

Mix the oleic acid with its own volume of alcohol, and gradually add the quinine, finally warming the mixture, if necessary, to effect complete combination, and filter if desirable. Expel the alcohol with a gentle heat, and incorporate a little water with the residue. Set it aside in the open air, occasionally stirring it, until the salt has become firm and perfectly dry.

Mr. Rother states that he has found the alkaloid quinine sold in the market to be the anhydrous base, and not the "trihydrate" as he at first supposed.

Characteristic Reaction of Citric Acid.

To distinguish citric from malic and tartaric acids, the following test is given by M. Mean (*Jour. Phar. d'Alsace-Lor.*): Fuse together in a porcelain crucible 1 gramme of crystallized citric acid, and 0.70 grammes glycerin, heat carefully until the mixture swells up and emits acroleine vapors, then dissolve in a little ammonia, of which the greater part is afterwards expelled by moderate heat; add two drops nitric acid (one in five) or peroxide of hydrogen (10 per cent). Citric acid thereupon assumes a beautiful green color, which changes to blue by heating. Malic and tartaric acids give no such reaction.—*Chem. and Drugg.*

The Adulteration of Olive Oil by Cotton-Seed Oil.

By ministerial order, a commission has been appointed in Italy to inquire into the question of the adulteration of olive oil by cotton-seed oil and the best means of its detection. The commission consists of four professors of chemistry and a member of parliament.—*Chem. and Drugg.*

Knodalin is the name of a preparation introduced by Prof. Mühlberg, in Aarau, which is recommended as sure death to insects and vermin of all kinds. This compound has recently been analyzed by C. Barentzin, of Berlin (*Pharm. Zeit.*, 1886, No. 52), with the following result:

Nitrobenzol 2-3 parts.
Xanthogenate of Potassium . . . 10 "
Potash Soap, containing about
60% water 400 "
Amylic Alcohol (crude) 600 "

The xanthogenate of potassium may have been originally added as such, or, possibly, have been formed from bisulphide of carbon employed as an ingredient.—*Pharm. Zeit.*

A Cement which is hard enough to withstand even boiling sulphuric acid may be obtained by gently melting India-rubber and adding eight-per-cent tallow while stirring. Sufficient slaked lime should be added to give to the compound the consistency of a soft paste. Twenty per cent of vermilion is now added, which causes it to harden immediately.—*Chem. and Drugg.*

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,755.—The Analyst (L.).

The editor of *The Analyst*, London, is Dr. John Muter. Address: 325, Kennington Road, London, S. E.

No. 1,756.—Olive Tree (F. P. Y.).

A good plate of a branch of the olive tree, both in fruit and in flower, is contained in Zippel and Bollmann's "Atlas der Ausländischen Culturpflanzen," part II., plate 5. This is natural size. You will find the work in the library of the College of Pharmacy of the City of New York.

No. 1,757.—Pill Sugar-coating Machine (M. E. B.).

Machines for sugar-coating pills are made by all first-class manufacturers of copper apparatus. There is no special "make" known to us as deserving particular mention. The main points are, an easy rotary motion, and a proper shape of the pan. You will find illustrations of such machines, for instance, in Remington's "Practice of Pharmacy," p. 975.

No. 1,758.—Oil of Red Cedar (Druggist).

"It never rains but it pours." We have had not less than three queries within about four weeks, about oil of cedar, which seems to have been comparatively uninteresting to our readers heretofore. As we have already given a full reply in our last number (August, p. 159) we must refer our correspondents (whose letters were all dated previous to their receipt of the August number by mail) to the account there given.

No. 1,759.—Chemistry of Fermentation (W. A.).

The best work on this subject which we are acquainted with is that of Dr. Joseph Bersch, in five volumes, containing: I. Die Hefe u. Gährungs-Erscheinungen (w. 75 illust.); II. Malzfabrikation; Malzextract; Dextrin (w. 121 illust.); III. Bierbrauerei (w. 160 illust.); IV. Spiritusfabrikation u. Presshefebereitung (w. 126 illust.); V. Essigfabrikation (w. 60 illust.). 8vo, Berlin (Paul Parey); price, 48 marks.

No. 1,760.—Destroying Water Bugs or Roaches (F. H. L.).

A good plan is to render the place which the water bugs or roaches frequent, perfectly dry, and then coat the boards or shelves with a strong decoction of quassia. When this has become thoroughly dry, cover the boards, etc., with clean paper. Other bitter substances may be used in place of quassia. In places where articles of food, drink, or clothing are not likely to be placed, some poisonous substance, such as corrosive sublimate, may be employed. But great care should be taken that it be not applied in such a manner that it can eventually be brushed off in dust. A good plan is to dissolve a little shellac in solution of borax, to add a very small quantity of bichloride, and to paint the solution into the cracks and corners. If water or dampness is kept away from the shelves or closets, the roaches will leave the place of their own accord.

No. 1,761.—Cocaine (G. G. S.).

Cocaine was discovered by Niemann in 1860, who gave it its name. It was subsequently further studied by Lossen in 1865. Gaedeke had already, in 1855, discovered in coca a crystalline substance, which is described as capa-

ble of being sublimed, and the nature of which is doubtful. He named it erythroxyline, but it is not likely that it was identical with cocaine. Recently it has been pointed out that cocaine had been first obtained in 1857, by Enrique Pizzi, Professor at the University of La Paz, in Bolivia (see this journal, June, 1866, p. 106). However, no notice of this discovery reached Europe until the present time.

Further notes on Cocaine, giving you all the information you desire, you will find in previous issues of this journal, beginning with our volume for 1884, page 230, where the discovery of its remarkable medical properties is fully detailed. The subsequent numbers of our journal contain numerous other articles which you will easily find by consulting the index.

No. 1,762.—Spiritus Vitæ.

A "Subscriber" says: "We have a call, once in a while, for Spiritus Vitæ, said to be an old preparation. Would like to know what it is."

We presume it is the *Spiritus Vitæ Matthioli* (*Essence de Cannelle composé*) which we believe is still occasionally used in France and other continental countries, but which is hardly deserving of notice in our days. However, here is the formula:

Canella, 30 parts, Galangal, Marjoram, Mint (crisp), Cubebs, Aloe Wood (aloexylum), Ginger, Zedoary, Cloves, Nutmeg, Mace, each 15 parts; Calamus, 8 parts, Thyme, Wild Thyme, Sage, Rosemary, Red Rose, each 8 parts; Yellow Santal, Small Cardamoms, Anise, Fennel, each 4 parts; Lemon Peel, 45 parts; Alcohol (80%) 3000 parts. Distil the alcohol off the spices.

It is just possible that some confusion has arisen between the names *Spiritus Vitæ* and *Elixir ad longam vitam*. The latter used to be a preparation for which nearly as many ingredients were required as for the former. In the course of time, however, one after another of the less important constituents was dropped, until finally there emerged a rational substitute, under the official title, *Tinctura Aloes composita* (Germ. Pharm.), the formula of which is as follows: Aloes, 6 parts; Rhubarb, 1; Gentian, 1; Zedoary, 1; Saffron, 1 part; Diluted Alcohol, 200 parts. Prepare by maceration.

No. 1,763.—Stills and Percolators (M. E. B.).

B. wants to know what is the "best still." He says that all stills are "best," according to the circulars. We cannot help believing that this is, to a certain extent, true if the special features of each are taken into consideration. It is impossible to give any intelligent advice for selecting a still, unless the inquirer supplies certain data, which render the selection of one or another form preferable. Such data are:

1. What is the desired capacity of the still?

2. What is the nature of the liquids to be distilled?

3. Is steam to be used, or an open flame?

Presuming—on a guess—that our correspondent meant a small still for recovering the alcohol from small amounts of percolate, we believe that Wolff's still, or Herrick's still (see advertising pages) will answer your purpose fully. Remington's still is likewise very effective. If a steam still is wanted, many kinds and forms might be suggested, but as these are not generally kept in stock and are often ordered of varying designs and construction, we will not consume space by describing them.

The correspondent also asks us for our opinion on *Berry's Percolator*. We confess that we have no familiarity with it. Should any of our readers have had practical experience with it and favor us with a report, we should be pleased to publish it.

No. 1,764.—Permanent Solution of Iodide of Iron (U.).

On page 208 of our volume for 1885 we gave a formula for preparing a permanent solution of iodide of iron, for making the syrup, in which the quantity of iodine given is that required for ultimately preparing the syrup of the British Pharmacopœia. As the U. S. syrup is nearly twice as strong, it is necessary to alter the quantity of iodine as follows:

Iodine	2,574 grains.
Iron Wire	2 troy oz., or a sufficient quantity.
Distilled Water	q. s.
Solution of Hypophosphorous Acid (20%)	3 fl. drachms.

Place the iron wire and 6 fluidounces of the water into a flask, and add about one-third of the iodine. Agitate the contents briskly, until the mixture begins to become hot, when the reaction should be moderated by placing the flask in cold water, or allowing cold water to flow over it. Continue shaking the flask, and when the reaction has apparently subsided, add about one-fourth of the remaining iodine at a time, carefully keeping down the temperature by the affusion of cold water, to prevent the appearance of violet fumes. Finally, raise the contents of the flask to nearly a boiling temperature, and filter into the solution of hypophosphorous acid contained in a bottle. When the liquid is cold, add enough distilled water to make the solution measure 8 fluidounces.

This solution, when mixed with five times its volume of syrup, will produce a syrup of iodide of iron practically identical, measure for measure, with that of the U. S. Pharmacopœia.

No. 1,765.—Archibald's Suppository Machine (H. W. M.).

One of our subscribers wants to know how to use Archibald's Suppository Machine. [See illustration and description in *NEW REM.*, 1879, 34.] He says that he is unable to remove the cast from the mould without breaking the suppository. He has also tried, after compression, to remove the suppository by immersing the mould in cold water; also in hot water. He also tried oiling the mould without success.

We have referred the matter to Dr. Archibald himself (of 1601 Passayunk Ave., Philadelphia), and he has supplied the following, which we publish for general information:

"In reply to your inquiry I would say, that if the moulds are dusted with Lycopodium, it will thoroughly obviate the difficulty complained of; so far as being unable to remove the cast from the mould, if he will use ordinary care in sliding the mould in a horizontal position, the suppository will remain intact in the other mould, when by simply making pressure upon the apex of the cone, a complete and perfect suppository will be the result. The same complaint has often been made to me before, and in every case where I could personally show the parties how to use them they have obviated the difficulty, and I have been and am constantly in receipt of scores of letters stating in substance that the machine is as near perfect as can be got, I myself having no trouble in the warmest weather in turning out suppositories as quickly as I would the same number of pills.

"By the way, I have added to my mould an additional appliance for making continuously nasal and urethral suppositories. So now the machine will make 15, 30, and 120 gr. suppositories, also nasal and rectal of $\frac{1}{4}$ and $\frac{1}{2}$ inch thickness. I am,

"Very truly,

"H. C. ARCHIBALD, M.D."

No. 1,766.—Digestive Power of Pepsin (E.).

This correspondent asks: "I would like to know why the time allowed in the U. S. Ph. test of pepsin for acting on albumen is 5 to 6 hours. I have noticed that pepsin digesting 30 grains of albumen in 6 hours, on standing 3 days longer, digested 20 grains more, or about 50 grains altogether."

The digestive action of pepsin is by no means exhausted when it has apparently ceased to act upon albuminoids in a given solution. The *pepsin ferment is not destroyed* by its peptonizing effect, but remains intact, or is at least restored to its original condition, throughout the peptonizing process. Its activity, however, depends upon the presence of a sufficient proportion of acid, as well as upon the density and dilution of the liquid. After a given amount of pepsin has apparently exhausted its effects, in a certain volume of acidulated solution, upon a given quantity of albumen, it is only necessary to dilute the liquid with a little water and to add a further small proportion of acid, in order to restore its efficacy. When the proportion of the pepsin to the volume of liquid finally becomes too small, its activity naturally is less noticeable, and may appear entirely destroyed. But as long as the liquid is kept in a perfectly aseptic condition, and as long as the pepsin ferment has not actually been destroyed or rendered inert by heat or certain chemicals, it will retain its vitality for any length of time.

The U. S. Ph. test of pepsin will require to be prescribed in more precise terms at the next revision. In testing pepsins, particularly when comparing different pepsins for their activity, it is of the utmost importance to have all the conditions under which they are examined as uniform as possible. The "hard-boiled albumen" which the pepsin is to act upon should be defined as hard-boiled white of egg, rubbed through a sieve having ten meshes to the linear inch. The time should be specified at exactly five hours, and the contents of the several vials or test-flasks should be kept in gentle motion, which may be accomplished by a simple mechanical contrivance. If it is found impracticable to agree upon an apparatus of this kind, then the vials should at least be agitated, say one minute at a time, every half-hour.

No. 1,767.—Court Plaster (W. D. F.).

You will find a practical working formula for this in the U. S. Pharm. (1880), under the title *Emplastrum Ichthyocolleæ*. The process is, in brief, as follows, using definite weights and measures:

Dissolve 160 grains of best Russian isinglass in enough hot water to make the solution measure 4 fl. oz. Spread one-half of this, in successive layers, upon taffeta (silk-tissue) stretched on a level surface, by means of a brush, waiting after each application until the layer is dry. Mix the second half of the isinglass solution with the alcohol and glycerin, and apply it in the same manner. Then reverse the taffeta, coat it on the back with tincture of benzoin, and allow it to become perfectly dry.

The *French Pharm.* (1884), gives the following directions:

Cut 50 Gm. of isinglass into small pieces, and macerate it for 24 hours in 400 Gm. of water. Now add 400 Gm. of alcohol, and heat the mixture on a water-bath in a covered vessel. When the isinglass is dissolved as much as possible, pass the liquid through a sieve. Spread strips of black, flesh-colored, or white taffeta upon a frame, and coat them, by means of a brush, with the above-mentioned gelatin solution, kept liquid by a gentle heat. Allow to dry and apply, successively,

several more coats of the same solution, until the taffeta is sufficiently coated. When dry, cut it into rectangular strips.

If the silk-tissue is not strong enough to permit stretching in a frame, it must be hemmed or bound with a braid at the edge. The best kind of brush to use is a soft, flat one. Care should be taken, in applying the first coats, that the liquid does not penetrate the fabric. It should, therefore, not be too warm; and the first coat particularly should be very thin. When finished, the plaster is best dried by exposure to a heat of about 85° F., care being taken that the drying of both sides proceeds uniformly. Hence it must neither be exposed to the sun, nor dried in an oven (Hager). The finished plaster may be smoothed by being rolled between polished steel-rollers, or pressed between plates of tinned iron.

In manufacturing the plaster on a large scale, the fabric may be kept stretched between a series of rollers, and long strips may be treated at one and the same time.

No. 1,768.—Prescription Difficulty: Morphine and Compound Tincture of Lavender (W. B.).

"I take the liberty of asking your advice concerning the following simple, but incompatible prescription which I dispensed a few days ago:

R Morphine Sulphatis gr. 1
Tinct. Lavandulæ comp. fl. 3 1
Aque destillatæ fl. 3 7

M. Fiat solutio. S. A teaspoonful every 4 hours, if necessary.

"The mixture may be a very common one, but I had never before had occasion to prepare it. Any one who remembers having ever made the mixture states that the morphine is precipitated upon the addition of the tinct. lav. co. I sent it out after having pasted "shake-well" directions on the vial, knowing that no chemical change occurs. Was I justified in dispensing it? Or, should I have spoken to the physician in regard to the incompatibility of the mixture, so that he might substitute some other aromatic for the comp. tinct. of lavender? For, I suppose, the latter was used merely to disguise the taste of the morphine."

Regarding the incompatibility of the mixture, we have to say that there is, indeed, a chemical change produced. Our correspondent correctly surmises that the fault lies with the compound tincture of lavender, but he has evidently failed to discover the precise cause. This compound tincture contains, among other ingredients, the coloring matter of *red saunders* (*Santalum rubrum*). Now this coloring matter is, in some respects, a rather intractable substance. It is, in fact, an acid which is almost insoluble in water, and forms insoluble or difficultly soluble salts (so-called *lakes*) with all bases but alkalies. The precipitate, which is formed when a morphine salt is added to a liquid containing santalic acid, is a santalate of morphine which collects in reddish flocculi. When comp. tinct. of lavender is mixed with water, it becomes opalescent or turbid, owing to the separation of santalic acid, but it requires some time for the latter to separate as a precipitate. The addition of an alkaloidal salt (or a metallic salt), however, at once causes a separation of the santalate formed.

These colored precipitates are soluble in caustic alkalies, provided the base itself is soluble in the latter. For instance, morphine is soluble in caustic soda or potassa. Hence, on adding enough of either of the latter to the muddy mixture, the precipitate will entirely dissolve. Alcohol will also dissolve certain of these lakes. But neither method is suitable for use in prescriptions.

Regarding the other points of the

query, we think our correspondent ought to have notified the prescriber before sending out the mixture. If the physician could not be reached, then he was perhaps justified in dispensing it with a "shake" label.

No. 1,769.—Pyrophosphate and Phosphate of Iron in Mixture with Phosphoric Acid (D. E. S.).

We have often had inquiries regarding the troublesome combination of the pyrophosphate and phosphate of iron with phosphoric acid, in mixtures, and have replied to them at length. But it seems that this is a constantly recurring trouble and needs to be frequently explained. We will try to convey our information in a different way this time.

There are three kinds of phosphoric acid:

Metaphosphoric Acid.

Pyrophosphoric Acid.

Orthophosphoric Acid.

The official phosphoric acid is the orthophosphoric acid, distinguished, among other things, by the fact that it does not precipitate tincture of iron and does not coagulate albumen or gelatin.

The pyrophosphoric acid does not interest us much as an acid, as it is not a commercial article; but the other phosphoric acids are liable to contain it as an impurity. It gives a precipitate with chloride of iron, but does not precipitate albumen or gelatin.

Metaphosphoric Acid is obtained by dissolving oxide of phosphorus in water, or by heating the other phosphoric acids until no more water is given off. This is available in commerce as *glacial phosphoric acid* but it is rarely found pure, being demanded by consumers in sticks, in which form it can be best cast when mixed with a certain proportion of phosphate of sodium.

Pyrophosphate of Iron is precipitated as a gelatinous mass by the official or orthophosphoric acid.

Phosphate of Iron is likewise more or less decomposed and rendered gelatinous (after a while) by the official acid.

Both salts, however, are perfectly soluble in, or miscible with metaphosphoric or glacial phosphoric acid.

Consequently the following rule should be followed:

When Pyrophosphate or Phosphate of Iron are ordered in a mixture together with Phosphoric Acid, do not use the official acid, but one freshly prepared from glacial acid.

The glacial acid not being pure, or of uniform strength, it is impracticable to do more than to approximate the required strength. By using the following proportions, an average strength, equivalent to the official acid, will generally be obtained:

Diluted Phosphoric Acid (from glacial).

Glacial Phosphoric Acid grs. 60
Distilled Water, enough to make, fl. oz. 1

This should be freshly made when wanted, or at least should not be kept too long in stock, as it is apt gradually to change in part into orthophosphoric acid.

On the other hand, when tincture of chloride of iron and phosphoric acid are prescribed together, *always* use the official acid.

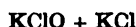
Now we turn to the query of our correspondent, who sends us the following prescription:

R Ferri Pyrophosphatis. 3 1
Strychnine Sulphatis gr. 1
Aque fl. 3 1
Acidi Phosphor. dil. fl. 3 2
Syrupi Zingiberis q. s. ad fl. 3 4

This is prepared simply by dissolving the pyrophosphate and the strychnine salt in the water, then adding the diluted phosphoric acid, prepared from the *glacial acid*, as above directed, and finally adding the syrup.

No. 1,770.—Javelle Water and Labarraque's Solution (W. J.).

The former is a solution of hypochlorite of potassium with chloride of potassium:



and the latter is a similar compound, the potassium being replaced by sodium. As you are aware, the latter is official under the title *Liquor Sodæ Chloratæ*.

The term Javelle water is derived from the fact that the above-named compound was first prepared at the chemical works of Javelle—a locality at the outskirts of Paris, on the road towards St. Cloud, where mills and other factories are located. In fact, this solution, first prepared at Javelle in 1792, was the first known bleaching liquid. It may be prepared in several ways. Chlorine gas may be conducted into a cold solution of 1 part of potassa in 8 parts of water, until the liquid begins to effervesce. Chloride of potassium is separated in small crystals, and, if common potash has been used, silicic acid is also thrown down. When the liquid was first introduced, it was always of a light rose-red tint, due to an accidental admixture of manganese salt, derived from the vessel in which the chlorine gas was generated. Subsequently it has probably become customary—according to Lunge—to add a little of the manganese residue, on purpose, in order to give it the accustomed tint.

It is, however, more rational to prepare a solution free from such artificial tint. And, moreover, it may be prepared much more readily by a process similar to that employed for the official solution of chlorinated soda, namely:

Liquor Potassæ Chloratæ.

Solution of Chlorinated Potassa.

(Javelle Water.)

Carbonate of Potassium. 58 parts.
Chloride of Lime..... 80 "
Water a sufficient quantity.

Mix the chloride of lime contained in a tared flask with 400 parts of water. Heat the carbonate of potassium, in another flask, with 300 parts of water to boiling, and pour the hot solution into the mixture first prepared. Shake well, cork the flask well, and set it aside to cool. When cold, add enough water to make the contents weigh 1,000 parts. Allow to settle, and separate the clear solution by means of a siphon, or pass the liquid through a muslin strainer.

The clear liquid obtained as a product has the specific gravity 1.050.

Regarding Labarraque, the following brief notice will probably suffice:

Antoine Germain Labarraque was born at Oléron (Departm. Basses-Pyrénées), on May 29th, 1777; became élève en pharmacie in 1801, passed his examination June 8th, 1805, subsequently became Member of the Conseil général de Salubrité and Knight of the Legion of Honor; also Member of the Academy of Medicine and of other societies. He was the author of several important publications, his most meritorious discovery being the fact that the effluvia caused by animal matter in a state of partial decomposition could be immediately destroyed by chlorine gas. The first impulse to his investigations was due to his being consulted about means of suppressing the bad odors arising from factories of violin strings (gut). For his discoveries in this direction, he received the Prix Montyon (of 3,000 francs) from the French Academy of Sciences, on June 20th, 1825. He died in one of the suburbs of Paris, Dec. 9th, 1850.

No. 1,771.—Helenin (J. W. and Dr. P.).

The following notice, taken from

Merck's trade circular, contains the information you desire:

Helenin or *elecampane camphor* ($\text{C}_{15}\text{H}_{10}\text{O}$) appears in form of colorless, neutral crystalline needles, melting near 110°C . It is almost insoluble in water, easily soluble in hot alcohol ether, fatty and ethereal oils.

Elecampane has long been reputed to be a gentle stimulant, diaphoretic, and expectorant, but until a short time ago it was little used by the regular profession. Recently it appears to attract more attention again, to judge from the increased demand. Dr. Korab has observed that helenin is an antiseptic, capable of destroying bacilli, particularly those of tuberculosis, and he therefore believes it will be found useful as a remedy in phthisis, malaria, and catarrhal diarrhea. The same observer states that 1 part of helenin will preserve 10,000 parts of urine from decomposition.

Dr. Valenzuela has obtained excellent results with it in whooping-cough. Chronic (?) bronchitis always (?) yielded to the use of helenin. Constant effects of the latter are a diminution of the cough, shortness of breath, and pain. It also acts as a tonic to the digestive organs; hence it may be given even to consumptives afflicted with severe diarrhea.

The dose of helenin is given as 0.01 Gm. ($\frac{1}{4}$ grain) ten times a day. It may be given in alcoholic solution (1 in 5) in doses of 5 drops three times daily.

In the Hôpital Tenon at Paris, there is employed an antiseptic dressing called "hélénol du Dr. Korab," which Merck believes to be an alcoholic solution of helenin.

The price of helenin, in small quantities, on the New York market, is about fifty cents a gramme.

No. 1,772.—Sparteine (N.).

This alkaloid was discovered by Stenhouse in 1851, in Broom (*Spartium Scoparium* L.; *Sarothamnus Scoparius* Koch). It is a volatile, colorless, viscid liquid having an odor resembling that of aniline, and very bitter. It is strongly alkaline, and but little soluble in water.

The *sulphate of sparteine* has recently been introduced into medicine as a cardiac tonic. The dose is given as 0.10 Gm. or $\frac{1}{4}$ grain. Compare our March number, p. 58.

The mode of preparation there given is rather circumstantial. It is quite likely that the method of dissolving out the alkaloid by a volatile solvent will be applicable to this alkaloid in the same manner as it is to most others. We do not speak from experience in this case, but would suggest to our correspondent, who asks our advice in the matter, to exhaust broom with water acidulated with sulphuric acid, to concentrate the solution, having previously neutralized so much of the excess of acid as will leave the residuary liquid still distinctly acid. Next, the concentrated liquid is to be made strongly alkaline by caustic soda, or perhaps better, carbonate of sodium, and the free alkaloid dissolved out by shaking with ether or chloroform, in both of which it is soluble. From this solution, it may then be obtained as a sulphate or other salt by shaking it with an aqueous solution of the corresponding acid. The salt thus obtained will probably need purifying by one or more recrystallizations, possibly with the intervention of animal charcoal to remove the last traces of coloring matter. We should be glad to learn whether our correspondent will have success with this method or not.

Information Wanted.

1. Composition of "Indian Paste."
2. "Acetated Castor Oil." What is the formula for its preparation?

CORRESPONDENCE

Prescription Difficulty.

(See Query No. 1,730 in July number.)

MR. GEORGE W. SLOAN, of Indianapolis, favors us with the following communication:

Editor American Druggist, New York:
In your last issue (July) I find "A difficult prescription," 1,730, and after giving the same as follows:

R Morphia Sulph..... gr. iij.
Tannic Acid..... gr. xl.
Acid Carbol gr. 20
Butyr. Cacao..... q. s.

Fiat suppositories No. x., the statement is made that this cannot be put up—which may be true if followed to the letter; if, however, the operator will allow himself a little latitude and use the following method, he will get fair results, at least such has been my experience.

Let him take forty grains of powdered elm, and incorporate the acid carbolic with this; then, with a portion of the cacao butter *grated*, incorporate the morphia sulph., and in a like manner the tannin, using a pill tile and spatula. Afterward the three may be intimately mixed and the suppositories formed by cold pressure.

The powdered elm absorbs the acid carbolic very nicely, and there is no objection to its use, and the mixing of the morphia salt and tannin with the cacao butter in separate portions protects them mechanically from any chemical reaction.

Inclosed find sample as for above method.

I have had a similar recipe to fill many times. Very respectfully,
GEO. W. SLOAN.

INDIANAPOLIS, IND., July 15th, 1886.

BIBLIOGRAPHY.

GENERAL INDEX TO THE YEAR BOOK OF PHARMACY for the years 1864 to 1885 inclusive. London: Published for the British Pharmaceutical Conference by J. and A. Churchill. 1886. pp. 246. 8vo.

THE compiler of this valuable index is not named, but the work appears to be well executed, and will be found of great assistance to those who may have occasion to examine the literature of pharmaceutical subjects. It is published in a style uniform with the series to which it relates.

DRUGS AND MEDICINES OF NORTH AMERICA, by J. U. LLOYD and C. G. LLOYD. Cincinnati, 1886. \$1 per year.

THE first number of vol. II. of this valuable quarterly publication relates to the *Liriodendron tulipifera* or tulip tree, and to several varieties of the *Magnolia*. The illustrations are numerous and compare favorably with those which have preceded them.

PROCEEDINGS OF THE FIFTH ANNUAL MEETING OF THE MASSACHUSETTS STATE PHARMACEUTICAL ASSOCIATION, pp. 232. 8vo.

THIS handsome report gives a very complete account of the working of the Association, and contains much valuable matter of a scientific character. Notice is given that this and previous reports are for sale at the price of 25 cents for that of 1882, and 50 cents for the volumes of succeeding years.

Woodward, C. J. Arithmetical Chemistry; or, Arithmetical Exercises for Chemical Students. Part I., second edition. 12mo. Birmingham. 1 sh.

American Druggist

Vol. XV. No. 10.

NEW YORK, OCTOBER, 1886.

Whole No. 148.

MICHEL EUGENE CHEVREUIL.

MICHEL EUGENE CHEVREUIL, the eminent French chemist, whose hundredth birthday has just been celebrated in Paris, was born on the 31st of August, 1786, in Angiers. *La Nature* gives a very interesting account of his remarkable life, from which we extract a few passages and reproduce our illustration. His father was Michel Chevreuil, Master of Surgery and Doctor of Medicine. Claude Bachelier, his grandfather, and Gilles Chevreuil, his great uncle, were both Masters of Surgery. His father lived to the age of ninety-one, and was a prolific writer and noted for great intelligence, and excellent health. His mother, a woman of great sense and virtue, lived to the age of ninety-three.

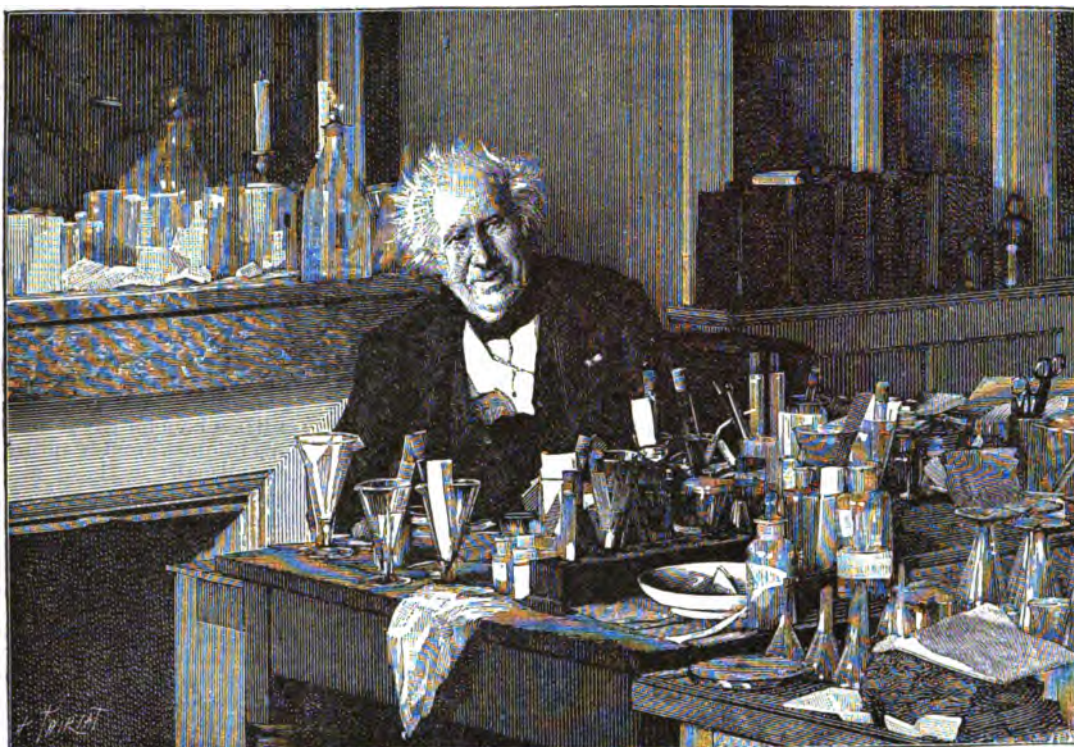
The youth of Chevreuil was passed in Angiers, and while there he wit-

Dumas said that he "was all chemist, chemist every day of his life, and chemist all day long."

Thenard was his laboratory superintendent and was followed by Orfila, Payen, Bouchardat, Frémy, and others of note. Chevreuil had hardly reached twenty years of age when Vauquelin gave him the direction of his laboratory, at which time he was also teaching in Charlemagne College. In four years more he became preparator at the Museum, and at the age of thirty was appointed director of the dye-works and special professor of chemistry at the Gobelins works.

It was Chevreuil who discovered the stearin candle. In 1814 he demonstrated the existence of olein, margarin, and stearin as component elements of oils and fats. His theory of saponification and labors in connection with fats (1823) not only created new indus-

Proust. None of his contemporaries of that epoch are now alive. In 1830 he became Director of the Museum, and so continued until he relinquished it to Frémy in 1883. For many years he was examiner at the Polytechnic School. He has also been President of the National Agricultural Society. All the leading scientific bodies of the world, such as the Royal Society of London, and the Scientific Societies of Copenhagen, Stockholm, Berlin, Moscow, Philadelphia, and others, have included him among their foreign members. Until 1855 he had been a member of the jury of every French exhibition. He became a member of the Legion of Honor, and in 1844 was a commander; a grand officer in 1865, and in 1875 he received the grand cross. The foreign decorations that he has received would cover his entire breast. His life has been passed be-



MICHEL EUGENE CHEVREUIL.
(One hundred years old.)

nessed in 1793 the beheading of two girls who had been accused of sheltering some heretical priests. At Murs, on the Loire, where his parents had a country-house, he witnessed the sanguinary battle of Murs Rock, between the Vendéans and Republicans. Nevertheless, in recent years, he has spoken of having passed the pleasantest days of his life at Murs, and expressed the desire to be buried there.

After the revolution, the old University of Angiers having been replaced by a "central school," young Chevreuil became a student between the years of twelve to seventeen. His first professor of chemistry was Héron, who was reputed, among his pupils, for his faculty of lucid teaching. Before Héron's death at an advanced age in Angiers, while academical inspector, Chevreuil had already achieved a brilliant reputation. Upon leaving college in 1797, Chevreuil was admitted to the laboratory of Vauquelin, in Paris. Fourcroy was laboring to secure the restoration of advanced studies, and was teaching at the Museum, having relinquished his chair of the College of France to his old assistant, Vauquelin, of whom

tries, but widened the horizon for organic chemistry and opened the way for other discoveries. Turning his attention to the chemistry and science of colors, he reduced the alliance of colors to exact scientific laws, and in 1864 his book upon this subject reproduced the labor of many years, having been preceded in 1828, 1831, 1839, and 1848 by memoirs upon this subject. In the later work Chevreuil traced the rules of those undulatory and fugitive effects produced by the colors of walls, furniture, wood, fabrics, and clothing upon the flesh color of human beings and even went so far as to relate to the arrangement of flowers and ornamental plants in gardens. His enunciation of the laws governing the simultaneous or successive contrasts of colors, the theory of colored shadows, and the art of defining by means of a chromatic circle every shade by a figure, has enabled the reproduction in foreign countries, and without his seeing them, the tones of a fabric or tints of a picture painted in Europe.

In 1826 he was elected to the vacancy in the chemical section of the Academy of Sciences, caused by the death of

tween the Museum of Natural History, the Gobelins tapestry works, and the Institute of France, and he has never failed to be present at the Monday meeting of the Academy.

The number of memoirs of which he has been the author are almost incalculable. During the Franco-Prussian war (1870-71), he remained within Paris during the siege, living at the Museum even while more than eighty Prussian shells were shattering the galleries and breaking the cases. His library at the Museum is large and is still increasing. The secret of his life would seem to be *work and moderation*. His wife died many years ago and he has since lived alone, with only a couple of servants, his only son residing at Dijon.

Mr. Chevreuil has accumulated a large fortune by his scientific labors and it is still increasing. During a few years past, his life has been almost a constant ovation, but he still continues to work in his laboratory, and to take a prominent part in the work of the scientific bodies with which he is connected.

Mr. Chevreuil is tall and straight,

elegant in manner, and matchless in affability, and it is rarely the case that, in approaching a person, he has not a smile upon his countenance. He has a splendid head, with a wide and powerful forehead, and white hair. He is a man of humor as well as genius. Upon recently employing a new preparator, he remarked: "You must have courage in order to accept a situation as my curator. I have already killed four."

In his mode of life Mr. Chevreuil is very temperate, drinking nothing besides water and beer. His vigor is shown by the statement recently made by the daily papers that on the evening of his centenary he attended the opera.

NOTES ON THE PHARMACY OF HYDRONAPHTHOL.*

BY THOMAS D. McELHENIE.

HYDRONAPHTHOL was introduced about a year ago by Messrs. Rigney and Wolff, of New York. The principal literature on the subject is a series of articles by George R. Fowler, M.D., of Brooklyn, on its uses in surgery, the first of which appeared in the *New York Med. Journal*, for October 3d, 1885. About this time, at Dr. Fowler's request, I prepared two cases of sponges with the new antiseptic for use in St. Mary's Hospital, and have taken some interest in it since. Dr. Fowler reviews the chemistry of hydronaphthol, showing its relation to the phenol series, and then describes very exhaustive investigations into its antiseptic properties. A few notes on its chemical nature may not be out of place here. There are two hydroxyl substitution compounds of naphthalin known as *alpha*- and *beta*-naphthol, made by heating naphthalin with sulphuric acid; *alpha*-naphthol is formed between 60° and 90° C., and *beta*-naphthol between 180° and 190° C.

The *alpha*- or *beta*-naphthol monosulphonic acid thus formed is decomposed by sodium hydrate into sodium naphtholate, sodium sulphite, and sodium hydrate. The sodium naphtholate, when decomposed with hydrochloric or sulphuric acid, yields naphthol, which is then purified by sublimation. The term hydro-naphthol, although slightly vague in a scientific sense, indicates the origin and chemical kinship, and is a convenient term for commercial use. It is found to be about twelve times as strong as phenol in antiseptic power, and possesses several other advantages over that substance. It is non-irritant and non-corrosive and non-poisonous. The latter point was definitely ascertained by Dr. Wolff, of Philadelphia, by physiological experiments conducted at Jefferson Medical College. It is soluble in 1,000 parts of water at 60° F., and 100 parts at 212° F., from which the excess separates on cooling in beautiful brown feathery crystals. The saturated solution (1 in 1,000) has a slight aromatic odor, but it is practically tasteless. In somewhat stronger warm solutions, it has a bitterish, pungent taste. It sublimes at 90° C. It occurs in silvery white pulverulent laminae, and dissolves in 4 parts of alcohol, 3 parts of ether, and about 10 parts of cotton-seed oil. The latter requires the heat of a water-bath, but remains permanent on cooling. All these solutions show a black sediment on standing, probably some tarry impurity, which will be gotten rid of as the process of manufacture is improved. It dissolves in 10 parts of glycerin at the heat of a water-bath, but is almost entirely recrystallized on cooling, and remains suspended for days. It is stated by the manufacturers to be freely soluble also in chloro-

form and benzol. These I have not confirmed, but from the nature of it, it seems probable. Hydronaphthol is not germicidal, at least in the proportion of 0.5 in 100 parts, or five times the strength of a saturated aqueous solution, but it is reliably antiseptic in proportion of 0.1 to 0.05 per cent, preserving solutions of beef, glue, gelatin, starch, gums, and fresh urine, etc. Thinking that so valuable an antiseptic must prove useful in various ways in pharmacy, I have been testing it during the summer, and noted the following behavior to reagents. In all cases, the saturated aqueous solution was employed. This solution exposed to sunlight soon begins to darken, passing through various shades of opalescence, becoming brown after a month or so, and depositing a film on the entire inner surface of the bottle.

With Tinct. Chlor. Iron: No change resulted.

With Tinct. Iodine: Discharged color of first two or three drops, but became opaque on further addition.

With Ammonia: Light purplish tinge, changing to straw color after some hours.

Sol. Potassa:	No change.
Acid Tannic:	No change.
" Salicylic:	No change.
" Acetic:	No change.
" Sulphuric Conc:	No change.
" Hydrochl. "	No change.
" Phosphoric "	No change.
" Nitric "	An orange-yellow color, changing in a moment to a dense turbid olive-green by transmitted light, and dull purple by reflected light.

Acid Nitro-Hyd'chl. Conc:	Same as Nitric.
" " dil:	No change.
" Nitric "	No change.

Among the first uses to occur to the pharmacist will be the preservation of alkaloidal solutions. I have prepared some for trial, but they are too recent to prove anything at this meeting, being only made within three weeks. But I think that a solution of hydronaphthol, say five to seven grains to a pint of distilled water, will furnish a perfect basis for delicate solutions. I have noted, however, one exception. Sulphate of strychnine is decomposed and probably reduced to the alkaloid. The use of hydronaphthol will enable pharmacists to prepare fresh beef juice by sprinkling on the finely chopped beef a little of the powder, say ten grains to the pound; warm over a fire to about 130° F., and press quickly. The product would contain all the albumin and be infinitely better than the commercial meat extracts. The physician would best appreciate this after restoring a patient from extreme debility.

To Remove Freckles, a writer in the *American Practitioner and News* recommends the following treatment: The skin being washed and dried, is stretched with two fingers of one hand, while a drop of carbolic acid is applied exactly over a discolored patch. When it dries, the operation is completed. The skin becomes white, and the slight sensation of burning disappears in a few minutes.

TARTARIC acid is a remedy for profuse sweating of the palms. It can be used in powder or solution, four or five times daily, and should be allowed to remain in contact with the surface as long as possible.

CONCENTRATED PREPARATIONS.*

BY J. L. LEMBURGER.

THIS subject has been accepted with a full knowledge that there is more or less prejudice against the use of concentrated preparations, the dilution of which shall represent the weaker preparation of the pharmacopœia; such prejudice or opposition, as far as I can ascertain, is based not so much upon the impracticability of the plan, as upon the lack of pharmaceutical integrity in the preparation of the concentrated preparation, and, in the writer's judgment, this thought might form a topic for investigation if equal importance to the query is presented. Numerous trials were made, not in the way of modifying the pharmacopœia formulæ at all, but rather to accommodate demand coming from a certain class of patrons. I find that from an honestly prepared fluid extract, say, for example, fluid extracts of ergot, aconite root, nuxvomica, a wine or tincture can be prepared, answering in all respects to and filling the requirements of the official tinctures. It is true that the same therapeutic result will in most cases be attained by administering either one of the named preparations in a correspondingly similar dose, yet in the use of say tincture of aconite, or any other of the powerful preparations sometimes used for outward applications in liniments or washes, there can, in our judgment, no deterioration occur by such dilution; it has been frequently tried with fluid extracts of known purity and of careful home manufacture. There are still physicians who, in ordering the wine of ergot, stipulate that they want it made with the fluid extract as of old, although it is no longer the official process for its manufacture.

Infusions may be more readily made with a concentrated preparation, and are unquestionably quite as good therapeutically as those made by the required process of maceration for one or more hours. The writer has been in the habit of thus making the compound infusion of gentian, and although it is not an official preparation at this time, it was formerly, is frequently prescribed now, and should have been kept in the pharmacopœia. In my judgment, a concentrated preparation, such as one to which reference is made in the last edition of the U. S. dispensatory, page 795, is not only justifiable, but in every way practical and feasible.

Some pharmacists having country physicians' trade are frequently called on for an infusion of gentian, or perhaps digitalis or quassia, and it is wanted in less time than the official process will allow it to be made, and with the physician's consent have on numerous occasions accommodated such want by making from the fluid extract in the required proportion.

In answer then to query 100, it is my judgment that it is quite feasible to prepare concentrated liquid preparations of some drugs which may be diluted so as to bring them to the official strength. They might have to be specifically designated, say concentrated liquid of gentian for infusion, etc., and care would have to be taken in the proper adjustment of the menstruum.

Extract of Sweet-pea is said to be a homœopathic remedy for diabetes.

* Read at the meeting of the A. P. A., in answer to query 100: "Is it not feasible to prepare concentrated liquid preparations from many drugs, which need only be diluted with the appropriate menstruum to bring them to the official strength, without having them differ in any important point from the weaker preparations directed by the U. S. Pharmacopœia?"

* Read at the meeting of the A. P. A., at Providence, September 7th to 10th, 1886.

SPIRIT OF NITROUS ETHER.

BY EMLEN PAINTER, OF NEW YORK.

BEING engaged a few years since in the manufacture of different ethers on a considerable scale, and, in studying the subject, desiring to find a practical method for making muriatic ether (which eventually proved eminently successful), it became clearly manifest to my mind that spirit of nitrous ether was not made by a proper, or, at least, by the most rational method. However, when I began to consider the very general use of this article throughout America as well as Europe, the immense quantities of it produced, the very able men who have experimented with it in the different manufacturing establishments, and the amount of literature we have on the subject, I concluded that my plan was probably impracticable—though for reasons not then apparent to me—and that it must have been tried on a manufacturing scale and found wanting.

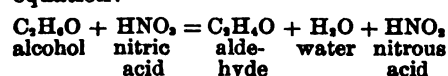
It is stated in Fownes' Chemistry, as well as in other works, that the *only* method of making *pure* nitrous ether, is a different one from the methods in use in all manufacturing establishments (so far as I know) and different from that of the pharmacopœia. To satisfy my mind on the subject, and if possible to turn out a better product, I began experimenting, but was compelled to interrupt my investigations for a time, and have only recently been able to resume them.

Although working at great disadvantage in not having sufficient time to devote to it, or suitable room or appliances, I beg to present my ideas, with a review of the experiments I have made, and deductions therefrom, trusting that they may assist in some degree in supplying pharmacy and medicine with a better article of spirit of nitre.

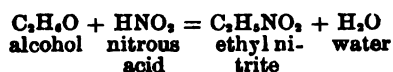
It is, I believe, an universally accepted fact that a mixture of nitric acid and alcohol with sufficient heat applied to cause a reaction, invariably produces, besides nitrous ether, some aldehyde, ethyl nitrate, and other nitrogenous products contaminating, to a greater or less degree, the distillate of nitrous ether from such a mixture, varying according to the temperature maintained, the changing strength of the alcohol as the operation proceeds, and the quantity of material acted upon. The separation of pure ethyl nitrite from this distillate, especially from the aldehyde, is so difficult a task, that there is probably not a sample of spirit of nitre in the market that does not contain more or less of this impurity.

Then why mix the nitric acid at all with the alcohol, when by first reducing the acid to nitrous anhydride, and passing this gas into alcohol under favorable circumstances, ethyl nitrite free from aldehyde is produced? I do not claim any novelty in this way of making nitrous ether, as before inferred, and I cannot conceive how it is that a working method after this plan has not long since been brought into successful operation by the manufacturers of this ether.

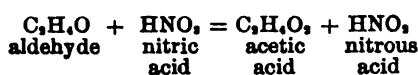
Before detailing my plan of manipulation (which is very simple indeed), let me point out more particularly some of the objections to the present methods. The first step in the reaction between alcohol and nitric acid to form nitrous ether is necessarily a deoxidation of the acid; the alcohol being the reducing agent, is consequently oxidized, thereby forming aldehyde in the very first stage of the process, as well as nitrous acid and water, as is more clearly shown by the following equation:



Then with a second molecule of alcohol the reaction with the nitrous acid in its nascent state forms nitrous ether.



The temperature at which it is formed, however (between 150° and 200° F., or the temperature required to produce a reaction with nitric acid), is far above that which is necessary to form nitrous ether with the resulting nitrous acid; other nitrogenous compounds are consequently simultaneously formed, or else a portion of the ether is immediately split into other combinations, nitric oxide gas being one of the results, which gas can readily be detected at the exit of the condenser. Hydrocyanic acid is also possibly produced beside the aldehyde, as well as acetic acid and acetic ether, all of these products having been found by different experimenters in samples of nitrous ether made by this method. In regard to the aldehyde first formed, I am aware of the theory that it reacts with another molecule of nitric acid, forming acetic acid and nitrous acid:



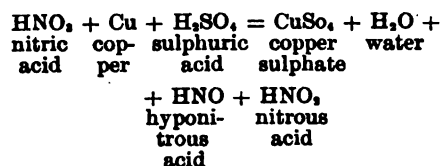
the latter acid being utilized as the molecule first formed.

This or some similar reaction is undoubtedly the case, otherwise the distillate of nitrous ether would be contaminated by aldehyde in a far greater degree than it is; but the aldehyde is not all decomposed; more or less of it distils over, and is condensed with the ether. The boiling point of aldehyde is 71° F., whilst the boiling point of alcohol is 173° F. A considerable quantity of the latter always distils over with the ether, so that it is reasonable to infer that aldehyde distils with it as well.

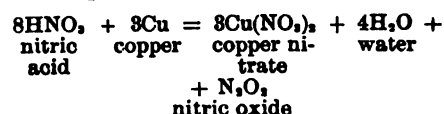
The use of copper, first recommended by Prof. Redwood, with the view of supplying a reducing agent for the nitric acid without resorting to the alcohol present, appears at first a very plausible theory, but in practice it certainly does not merit the distinction it has attained. In my opinion, it is worse than useless, or, rather, the disadvantages overbalance by far the advantages derived from its use. It fails in its object (the supplying of nitrous acid), and works an advantage only mechanically in regulating the action in the retort, which seems to proceed more regularly with it, and possibly at a somewhat lower temperature. This same end can be attained, however, by the use of sulphuric acid alone, or of sand, glass, fragments of pumice stone, etc., as shown by different experimenters.

In my experience, by careful manipulation, a larger yield of nitrous ether can be had from a given quantity of alcohol and acid *without* the copper *than* with it.

The theory of the formation of nitrous acid from the mixture of copper, nitric acid, and sulphuric acid looks very pretty:



but in practice, I think like this:



the sulphuric acid coming in afterwards, and merely displacing the ni-

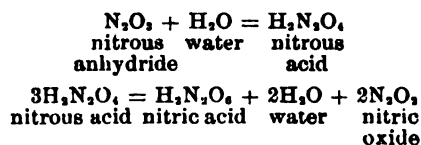
tric acid in the copper compound. At all events, it is a known fact that nitrogen dioxide gas (N_2O_4) is evolved, giving off red fumes in contact with the air, when copper and strong nitric acid are brought together.

The nitrogen dioxide formed in the retort passes through the condenser, and escapes, carrying with it a very considerable quantity of the vapor of nitrous ether, no matter how extensive and well-cooled condensing surfaces one may have. I was told by one manufacturer that his Liebig's condenser extended the whole length of a large room, fifty feet or more, and still ether escaped uncondensed. I have passed the distillate of crude ether—using copper in the process—through sixty feet of coil, surrounded from one end to the other with a freezing mixture of ice and salt. So cold indeed was the condenser that before the operation was finished the coil filled up with ice, by abstracting the moisture, and yet more or less of the ethereal vapor escaped. This is explained by the fact that nitrogen dioxide is being formed continuously, and, not being condensible, carries with it mechanically some of the ether vapor, on the same principle that in starting the distillation of a very volatile liquid (as doubtless we all have observed) uncondensed vapors will escape at first, and that condensation is not complete until all the air is expelled.

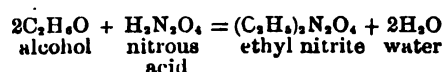
In view of the foregoing facts, and the deductions made therefrom, it appears to me that a more rational method of making nitrous ether would be to first reduce the nitric acid to nitrous anhydride by the agency of cotton, starch, arsenious acid, or other suitable reagents; then pass this gas, freed as nearly as possible from nitric acid, into a mixture of alcohol and water maintained at a temperature of about 100° F., the vessel being connected with a well-chilled condenser, and having the receiver surrounded by ice and water.

This method greatly simplifies the chemical reaction, and from my experiments I am led to believe that it is quite practical on a manufacturing scale, that the yield of ether is increased over the present method from 50% to 100%, that it is more economical, and, most of all, that an ether is produced free from aldehyde and acetic ether, and almost absolutely pure when first made.

The chemical reaction may be explained thus: Nitrous anhydride gas, on being passed into water, forms nitrous acid, which acid, however, cannot exist in aqueous solution, and is immediately resolved into nitric acid, nitrogen dioxide, and water, as shown by the following equations:



If, however, alcohol be present in sufficient quantity, the nitrous acid ($\text{H}_2\text{N}_2\text{O}_3$) reacts with it, forming ethyl nitrite and water:



and if the alcohol be maintained in the right proportion, but little, if any, nitric acid and nitrogen dioxide are formed.

It is unnecessary to give in detail the series of experiments made; yet it may be interesting to review briefly the steps taken.

In my first experiment, made in San Francisco some years ago, I used cotton to reduce the nitric acid to nitrous anhydride. The acid and cotton were put into a flask, placed over a gas

broken ice is provided for use as the operation proceeds, and one pint of strong alcohol is put into the reservoir. Heat is applied to the flask A, and regulated so that there will be a free and constant evolution of gas; the temperature of the generators C and D respectively is allowed to rise to 80° F., then they are immediately surrounded with cold water, and lumps of ice added to the pans from time to time to maintain the temperature between 80° and 120° throughout the operation. The bottle D is merely a precautionary provision in the event of the evolution of nitrous anhydride gas becoming so rapid in any stage of the process that it is not all taken up in C, when the remainder may be caught and utilized in D. At the close of the process, D may be surrounded with hot water to distil off any ether that may remain absorbed by the alcohol in it; this bottle, however, might possibly be as well dispensed with. It serves a good purpose, the water absorbing any alcohol that may pass into it, and the design of the bicarbonate of sodium is to take up any free acid there may be in the vapor as it passes, in which case the elimination of carbonic acid gas is, of course, objectionable; if the same object could be accomplished by an oxide it would be preferable. I find that caustic lime, potash, or soda does not answer, for the reason that they all decompose the ether. Magnesia or oxide of zinc does not seem to affect the ether, nor does it remove the acid completely.

As soon as the ether begins to drop from the condenser, the pinchcock on the tube leading from the reservoir is opened sufficiently to admit of about the same quantity of alcohol flowing into the generator C as there is ether passing into the receiver. In about three hours' time the operation will be concluded, and there will be found in the receiver twenty to twenty-five ounces of pure nitrous ether. On a larger scale the yield, of course, would be considerably greater; by this continuous process there would be left in the generator proportionally less alcohol, and by recovering the alcohol from the residues to be used in a subsequent operation, almost the theoretical quantity of ether might be obtained. At least, calculation shows that 100 parts of absolute alcohol can readily be made to yield 120 parts of ether. In my experience, pure nitrous ether is too volatile a product to be handled except in the laboratory of the manufacturer, and it, therefore, should never be sent out to the dispensing pharmacist. If there be a commercial demand for a more concentrated spirit than the official, I would recommend that the pure ether be diluted with at least three times its weight of alcohol, thus making a 25% solution, then one part of this to four of alcohol would make the official spirit of nitrous ether. In my opinion, however, it would be still better to at once dilute it to the official standard. If it is desired to preserve the ether in its pure state, I think it should be perfectly dried by passing the vapor through a proper dehydrating agent (fragments of fused chloride of zinc in a tube would probably answer), and then be immediately put into small, well-filled glass-stoppered bottles, the stoppers smeared lightly with glycerin before being inserted, and securely tied down and kept in a cool and dark place.

I desired to have presented with this paper a more minute description of the character and properties of the ether produced by this method, in comparison with the ether made by the method of the pharmacopoeia, but the summer weather being so unfavorable to investigations of such volatile products, my experiments are as yet too incomplete to give a satisfactory report on these points.

DOES CANNABIS INDICA CONTAIN NICOTINE?*

BY GEORGE W. KENNEDY.

IN the year 1876, Preobraschensky claimed to have obtained nicotine from Bucharian hashish, and also from gunja. After this announcement was made, several chemists experimented with the drug. Indian hemp, with a view of isolating the nicotine, but I believe they were unsuccessful in their efforts, even after repeated examinations were made.

For the extraction of the alkaloid nicotine from the herb *Cannabis indica*, the acceptor of this query concluded to submit the drug to two different and separate treatments, the object for doing so being that, in case one manipulation should fail, the other might be tried. Besides, there would be stronger evidence of the presence or absence of the base in search of.

It is well known that the alkaloid nicotine is not a permanent base, but quickly assumes a brown color on exposure to the air and light, and is partly converted into a resinous compound and, according to good authority, it appears even to undergo an alteration by repeated distillation in an atmosphere deprived of oxygen. Therefore, it is easy to realize the necessity of observing many little points apparently trifling, but yet of much importance in pursuing an investigation of this character, so as to obtain satisfactory and conclusive results.

A failure to observe any one of them, in all probability, would give quite contrary conclusions.

In order to make myself feel more satisfied with my work, I decided to work on tobacco for nicotine at the same time, the treatment being precisely the same in every particular and detail, so that if I succeeded in obtaining the alkaloid from tobacco, by either or both of the processes, then there should be no reason, if it was present, why I should not be successful in extracting it from the *Cannabis indica*.

In the one process I prepared an alcoholic extract of each by moistening the powdered drug with alcohol, packing in a conical glass percolator, and after allowing it to stand in this condition for twenty-four hours, pouring alcohol on the packed drug, until it was extracted, paying strict attention so that percolation would proceed slowly. The first third of the percolate was reserved, the remainder evaporated at a temperature not exceeding 50° C. (122° F.), to a proper consistence, the reserved portion added, and the whole evaporated to a pillular mass. In each case two pounds of the drug were used, with the following yield of extract:

Tobacco, 3½ ounces.

Cannabis indica, 3½ ounces; the former 9½ per cent, and the latter 10 per cent.

Dragendorff states that nicotine may be readily obtained by means of ether, chloroform, benzol, or petroleum benzol. The extract of each drug was therefore treated with a small quantity of alcohol and acidulated with sulphuric acid, after which water was added and the alcohol evaporated.

The resinous matter set free was separated by filtration; the acid filtrate was then agitated with ether, and the watery acid liquid separated and rendered alkaline by potassa, and again agitated with ether. The ether would now take up the alkaloid nicotine if present, and it could be obtained by spontaneous evaporation. Since, however, the alkaloid is easily altered, only a portion of the ethereal solution was evaporated, the object of

which was to procure a small quantity of the pure nicotine. In evaporating the last traces of ether present from the almost colorless base, I discovered that the alkaloid was undergoing a change, as it soon showed signs of decomposition, by slowly changing to a dark brown color. The second portion was converted into a salt by agitating with slightly acidulated water (H₂SO₄), first driving the ether off, and afterwards evaporating the watery liquid. In the above examination, the Indian hemp gave negative results, but when a solution was tested with the general alkaloid reagents, such as the potassium-mercuric iodide and phosphomolybdic acid, a very faint precipitate was perceptible.

The second process was conducted by exhausting the bruised drug with acidulated water, by evaporating this acidulated liquid to a small bulk, and then distilling with a solution of caustic potassa, the distillate neutralized by dilute sulphuric acid to combine with any alkaloid present, and the slightly acidulated solution tested with the alkaloidal reagents in order to ascertain whether an alkaloid is really present or not. As in the preceding experiment, a faint indication of the presence of an alkaloid was shown by a very light precipitate. The neutralized solution as obtained above was then evaporated to dryness on a water-bath, and treated with absolute alcohol, in order to separate any ammonium sulphate with which it might have been contaminated. The alcoholic liquid which would contain the nicotine sulphate was evaporated to the crystallizing point, when a small group of crystals were obtained. By dissolving the crystals in water, making the solution strongly alkaline with caustic potassa, and finally shaking with ether, the ether, upon evaporation would leave the free base in quite a pure state.

In this second examination I failed to obtain nicotine from *Cannabis indica*, but was successful with the tobacco.

In concluding my work on this query, I would answer it by saying that nicotine is not present in *Cannabis indica* in accordance with my investigations, but there is strong evidence of an alkaloid of some kind, as the tests above referred to would indicate.

Late investigations by others point in the same direction.

Lanolin as a Basis for Ointments.

—In a preliminary note in the *Russkaia Meditzina*, No. 12, 1886, p. 207, quoted in the *London Medical Record*, Dr. L. K. Pavlovsky, of Kharkov, writes that his experiments with Liebreich's lanolin (first in Russia) enable him to arrive at the following conclusions: 1. Narcotic extracts, when combined with lanolin, are absorbed by the skin "quite satisfactorily," their pain-relieving action being obtained "with an almost perfect certainty." The dose used was only twice as large as that for internal use. 2. Hydrochlorate of quinine is absorbed also very easily. This statement is based on four cases of intermittent fever in children, where lanolin and quinine inunctions rapidly gave the effects desired. 3. When a lanolin ointment, with iodide of potassium, is rubbed in, iodine appears in the urine not sooner than two, four, or six hours after inunction, while Lassar obtained iodine from the urine about three minutes after friction. 4. In children, lanolin is better absorbed than in adults. 5. Washing the skin with ether considerably facilitates the absorption of lanolin ointments. 6. In general, lanolin is a substance which promises to supersede all other constituents for ointments, and even, in certain cases, to render superfluous the internal use of drugs.

* Read before the Amer. Pharm. Assoc., in answer to query 97.

EVAPORATION OF PERCOLATES.*

BY PROF. J. U. LLOYD.

IN a series of papers preceding this one, I have referred to certain conditions that influence favorably or unfavorably the act of percolation. Passing now to the percolate, which we usually have to concentrate, in whole or in part, by evaporation in making the various pharmaceutical preparations, I will introduce a subject that we also must take into consideration in order to produce uniform results at different times and when working varying quantities.

In making fluid extracts and many other preparations, we have to evaporate reserved percolates, or entire percolates. It is generally accepted that a protracted application of heat to liquid preparations of vegetable origin is to be avoided, and in many instances it is certainly necessary to employ but little, and often to avoid any heat. In this paper, I shall not consider the effect of the use of heat in individual percolates, but shall call attention to a feature of general application, and which is scarcely, if at all, considered by pharmacists. It involves the preparation of many substances, and may prove of interest to pharmacists who have overlooked this phase of the subject.

In making the official amounts of fluid extracts, we usually have varying, but small bulks of percolates to concentrate to a certain amount. Many of us have reason to increase the official quantities, and perhaps few pharmacists conform literally to the amount of drug specified in the pharmacopœia. The problem I bring forward is, can an increase or decrease of the amount of material cause a variation in the product, provided the proportions of all substances are maintained? For the sake of argument, we will admit that in all operations the act of percolation is complete and uniform.

That an increase of proportions may make a difference in the product is evident to all who have reason to increase amounts from time to time. Often many times the original formula is employed, and that such an increase will make a variation in the quality of the evaporated product, from the application of excessive heat alone, can, I think, be conclusively demonstrated.

I will take, as an example, a substance in which the variation can be made apparent to the eye.

If fifteen fluidounces of vinegar of squill be evaporated to one fluidounce, does it follow that this product is identical with like amounts of the product that results from the evaporation of thirty fluidounces to two fluidounces, the same temperature being maintained in each instance? Continuing, will the resultant liquid remain uniform, when batch after batch is doubled, provided that the product is also each time doubled, thus maintaining the proportion? In reply, I submit as samples, in vials of uniform diameter:

No. 1. From seven and one-half fluidounces of vinegar of squill evaporated to one-half fluidounce.

No. 2. From fifteen fluidounces evaporated to one fluidounce.

No. 3. From thirty fluidounces evaporated to two fluidounces.

No. 4. From sixty fluidounces evaporated to four fluidounces.

No. 5. From one hundred and twenty fluidounces evaporated to eight fluidounces.

The evaporation was conducted in porcelain dishes of the usual dimensions. The temperature varied but little from 175° F. to 180° F.

It will be seen that the specimen that

I submit, representing the smallest amount of drug, is a light amber color, but darker than the vinegar of squill used in making it, and that each successive batch increases in color with the increase of material, until a dark brown-red is produced. It will also be found that the odor varies from a pleasant dilute acetic acid in the small amount to that of a burnt cracker in the larger, and it is also true that the flavor of successive batches becomes more foreign to prime squill as there is an increase of material worked. Thus it is evident that there is a variation in product with each increase of batch, even though in all instances the same formula is followed, for, in all these experiments, filtered vinegar of squill from one batch was employed.

In explanation of the apparent inconsistency, a little thought will show us that the conditions were changed in each experiment, although the same process was followed, and that no two batches were submitted to the same application of heat.

	Time required.	Size of dish.	Surface of liquid before evaporation.	Surface of liquid after evaporation.
No. 1	160 min.	12 oz.	5 in. in diam.	3½ in. in diam.
No. 2	180 "	32 "	6¾ " " "	3¾ " " "
No. 3	400 "	32 "	7¾ " " "	5 " " "
No. 4	470 "	128 "	9¾ " " "	6 " " "
No. 5	745 "	128 "	11¾ " " "	7¾ " " "

The increase of evaporating surface in the usual evaporating basins, as we pass to larger dimensions, is not sufficient to produce a uniform product when proportions are increased accordingly. Therefore it follows that, with substances injured by a continued application of heat, we must take into consideration the fact—for it is undeniable—that a conformity to the official process may be only apparent and not practical. I have selected as an illustration a substance in which a change produced by heat is perceptible to the eye. It is not more clearly defined, however, than is the case in many other bodies that have come under my consideration, where I have been forced to increased batches, often to a thousand pounds or more, and I am not as enthusiastic as some persons are regarding the injury following the application of a moderate heat to the majority of products from dried plants. There is no doubt, however, that in many cases a continued application of heat (simply from an increase of quantity, and where the operator really thinks he will make a substance to conform with the pharmacopœial requirements) may result in a product that, in many respects, would be entirely different from that made if the official amounts were followed. The application of this rule is general, and, when the conditions of the apparatus are similar, favors the pharmacist who follows the U. S. P. amount rather than the manufacturer who uses the U. S. P. process, and applies it to large quantities. Doubtless all of us have been confronted with this problem by an observance of the change following the variation in batches, but, perhaps, we passed it by as unimportant, or argued that a like process must produce like results. Many arguments have been advanced as to the advantages or disadvantages of operators on a large or small scale, but as yet I have to find the first claim by the pharmacist who works in pharmacopœial amounts of the advantage he has as introduced in this paper.

In another paper* I speak of a fluid extract of squill, and say that the pro-

duct "ranges from light amber to dark brown-red in accordance with conditions of the evaporation." Herein I have shown that the larger the amount employed, the more objectionable the product. By the usual methods of evaporation, that formula is only applicable to small amounts, and cannot be employed in making large batches.

PASTE FOR LABELS.*

BY LEO ELIEL.

THIS query upon first appearance seems a very trivial one, but when we consider the frequency of the calls for the paste pot in the drug shops, its pertinence is at once apparent. Every pharmacist has his own way of making paste, and though well aware that this article is looked upon as being, in a general sense, hardly worth the time spent upon it for experiments, yet it should receive the same careful attention as matters of greater import. It is the careful attention to those minor matters that prove themselves the main factors to success in our profession and business.

The paste pot, like unto the immaculate towel of the average drug shop, are things to be used, and seldom are found in condition suitable for exhibition in the front window. It is of frequent occurrence to find the paste dried up, and the brush hardened and firmly attached to the bottom of the pot. In our haste to finish some work in hand, we rudely disturb its peaceful rest and fond attachment, and what matters it if we do loosen a few bristles to the annoyance of the next one who may have occasion for its use? Then, again, this same pot develops a well-marked desire and tendency to accumulate its pent up energy on the edges, especially the inner one; this, no doubt, is a kind provision of nature protecting its contents from evaporation, though it rather impedes the easy removal and return of the brush. There are many other peculiar features that might be mentioned in this connection, but time forbids.

There have been so many formulas published for pastes and mucilages (both for labelling), that one would think there was no room for more.

Pastes and mucilages for shop use are best kept in a covered wide-mouthed jar, tall enough to permit the brush to remain inside with the cover on. It should never be allowed to become encrusted with hardened paste, and the brush should frequently be cleaned.

The formulas here presented, with samples, are not original with the writer, but have been in use by him for many years with entire satisfaction.

1. Gum Tragacanth..... 1 oz.
" Arabic..... 4 oz.
Dissolve in
Water..... 1 pint.
Strain and add
Thymol..... 14 grains.
Suspended in
Glycerin..... 4 oz.
Finally add
Water..... to make 2 pints.

This makes a thin paste suitable for labelling bottles, wooden or tin boxes, or for any other purpose paste is ordinarily called for. It makes a good excipient for pill-masses, and does nicely for emulsions. The very small percentage of thymol present is not of any consequence. This paste will keep sweet indefinitely, the thymol preventing fermentation. It will separate on standing, but a single shake will mix it sufficiently for use.

2. Rye Flour..... 4 oz.
Powd. Acacia..... ½ oz.

* Read before the Amer. Pharm. Assoc., in answer to the query: "What is the best paste for labelling bottles, and how can paste be best preserved?"

* Paper read at the meeting of the Am. Pharm. Assoc. at Providence, R. I.

* This paper was not read at the meeting, as had been intended.—Ed. AM. DRUGG.

Rub to a smooth paste with 8 oz. of cold water, strain through a cheese cloth, and pour into one pint of boiling water. Continue the heat until thickened to suit. When nearly cold add:

Glycerin 1 oz.
Oil Cloves.....20 drops.

This is suitable for tin or wooden boxes or bottles, and keeps sweet for a long time.

8. Rye Flour..... 4 oz.
Water..... 1 pint.
Nitric Acid..... 1 drachm.
Carbolic Acid.....10 minims.
Oil Cloves.....10 minims.
Glycerin..... 1 oz.

Mix the flour with the water, strain through a cheese cloth, and add nitric acid. Apply heat until thickened to suit, and add other ingredients when cooling. This is suitable for bottles, tin or wooden boxes, and will not spoil.

4. Dextrin..... 8 parts.
Acetic Acid..... 2 "
Alcohol..... 2 "
Water.....10 "

Mix dextrin, water, and acetic acid to a smooth paste, then add the alcohol. This makes a thin paste, and is well suited for labelling bottles and wooden boxes, but is not suitable for tin boxes.

AMERICAN CARBOLIC ACID.*

BY EDGAR M. HATTON.

BEARING on the above subject, the following has been obtained: In 1866, encouraged by the experiments of Mr. Crookes with reference to the use of carbolic acid in arresting the cattle plague in England: the demonstration of its value as a constituent in a salve for foot-rot in sheep, and of emulsion for use as sheep dip, and other uses in connection with cattle and sheep raising: by its use as a preservative of raw hides, also by the prevalence of cholera in America in that year, a well-known New York firm commenced the manufacture of carbolic acid on a largescale, and have been constant producers since. For a few years they made no crystals for the market.

The reports of the Paris Exposition, held in 1867, show that at that time no acid was made with a higher melting point than 35° C. by any other manufacturer than Calvert, with the exception, perhaps, of the house of Chas. Lowe & Co., an off-shoot of the house F. C. Calvert & Co. Calvert claimed at that time that their acid, melting at about 40° C., was the only acid that would dissolve in twenty parts of water. To-day any good acid with a melting point even as low as 32° C., will dissolve in sixteen to seventeen parts of water.

This is due to the fact that German manufacturers, instead of purifying the acid by mechanical means, came to the true cause of the difficulty, viz.: the presence of sulphate of picoline, etc., and removed them by proper chemical processes. Perhaps encouraged by this, in 1874, the New York firm commenced the manufacture of crystal acid for the market.

On the foregoing subject, communications were recently addressed to a number of purported manufacturers of carbolic acid throughout the country, but with few exceptions no replies have been received. Considering the manner and style in which the communications were couched, and the way that many have remained unanswered, one is left to infer that the businesses of these parties are not as they would have them seem. Possibly it might have occurred to each that silence on his part might be unnoticed

and thereby exposure avoided. In fact, the greater part of the parties claiming to be manufacturers of carbolic acid are either simply distillers of the crude acid oil; refiners of impure acids, mostly foreign; or redistillers of pure imported acids into bottles. This latter process is said to have a decided advantage in adding to the appearance of the crystals. Another class can be added to the above, and while last, we may judge it is not the least, viz., the party with the enterprise to put his own label on another man's product. It frequently follows that those who are enterprising enough to perform this change, charge dearly for their enterprise by adding largely to the selling price. Based on information obtained, there seems to be now only one manufacturer of pure crystal carbolic in America from American coal tar. This firm probably supplies upwards of one-fourth of the crystals and more than one-half of the higher grades of liquid acid used in this country, and is thought to be the only tar distillers in existence anywhere who carry the manufacture to final results. They also use much of the crude material produced by other distillers. In Europe the tar distillers are entirely separate from the acid makers. It is reported that another firm contemplates the manufacture of crystals from American coal tar. One other, some two or three years ago, did produce crystals, but has withdrawn this branch from his establishment.

There seems to be room for further manufacture from American tar, as there was last year a surplus of one hundred thousand barrels, and statistics show that the following number of pounds of acid were imported into this country for the several years named:

Year ending.	Pounds.	Doll.	Rat. of Duty.
June 30, '81,	115,691	48,691	10 per cent.
" '82,	178,842	42,237	10 "
" '83,	1,394,603	46,601	10 "
" '84,	177,395	23,198	Free.
" '85,	461,548	52,288	Free.

This refers to all grades of acids brought into this country, there being no distinction made, as all grades were subject to the same rate of duty. It will be noticed that in 1884 the duty was removed. This disadvantage to American manufacturers is claimed to have been overcome by the decline, about the same time, in prices of caustic soda and sulphuric acid, both of which are quite material in its manufacture. There is no public record of exports, but there is evidence that shipments are made to the West Indies and South America.

In the form of soap, sheep dip, and kindred substances, large shipments are made to South America and frequently by the way of England. A sudden call of late from Japan quite cleared the New York markets of crystals.

It is commonly known that the distillation of coal tar for the purpose of obtaining simply the crude acid is not itself profitable, consequently other ingredients are sought for also. Some of them are produced for the aniline manufacturer, and no doubt the time is not distant when the working of the coal tar oils will be taken up in all of the large cities where gas and coal tar are largely produced, and become a very important industry in this country; then will naturally follow a larger production of crystal carbolic acid, and there is no reason why the foreign article should not be excluded from our market. From further information it is thought without doubt that acids are made in this country, and others perfected from foreign material that fully come up the pharmacopoeial standard, and in this respect equals any of the imported articles. One party adds, in regard to their product

going beyond this standard, "and this is accomplished without using phosphoric or any other acids to maintain its colorless condition."

Samples presenting indeed a handsome appearance have been received, and were sent in good faith to verify the truth of the statements made in regard to the purity claimed for the goods. From one firm a number of samples taken directly from stock and representing the leading varieties made by them were received.

Following the several numbers will be found a description of the contents of each bottle.

Carbolic acid No. 1, melting point above 36 deg. C.

Carbolic acid No. 2, melting point above 32 deg. C.

Carbolic acid No. 3, common crystal, uncertain as to melting point and color.

Carbolic acid No. 4, 90 to 95 per cent pure phenol, the rest water to keep its liquid at ordinary temperature.

Carbolic acid No. 5, cresol of light color, no impurities save water.

Carbolic acid No. 6, cresol and xylene, containing some neutral oils and naphthalin, 80 to 85 per cent.

Carbolic acid, 60 per cent crude.

Also a bottle of creasote.

The crude acid is reduced to any strength desired by the trade, even as low as 10 per cent, with the inferior tar products.

These packages, when sold to the trade, are branded with the percentage of acid contained therein. It can be readily seen how the retail trade and the public generally can be deceived in this crude acid after it has passed into second hands.

It is said that the lower dilutions of crude acids are very freely used, and true carbolic acid has had to answer for the dissatisfaction caused by their use.

Much of it is sold without explanation, and people being satisfied with the tarry smell think they have used acid freely, when really little genuine acid has been made use of. If these lower grades had never been used under the name of carbolic acid, the use of the true acid would be greater and its reputation better to-day.

The lower grade acids are not imported into this country.

From the foregoing we find that carbolic acid is made in America that can well be depended on as a medicinal agent, that it can be conscientiously used in dispensing; and, since the low grade acids are strictly American products, would it not be well to encourage the sale of the genuine acid, thereby not only doing the public a good service, but also encouraging the manufacturer by allowing him a further profit in converting these inferior grades into pure crystal carbolic acid in which there is much virtue.

Ivy Poisoning.

Carbolic Acid..... 3 i.
Strong Ammonia Water..... 3 ss.
Olive Oil..... 3 ij.

M. Apply on compresses every two to three hours, an ice-bag being superimposed if there is much pain.—DR. H. HAHN, *Therap. Gaz.*

Sulphate of Zinc..... 3 ss.
Olive Oil..... 3 viij.

Shake thoroughly and apply on soft cloths, two applications being usually sufficient.—DR. BUZZEL, *Idem.*

Osmate of Potassium, made by Merck, of Darmstadt, to take the place of osmic acid, has been reported to have proved serviceable in epilepsy. The salt is preferable to the acid as being less hygroscopic and less irritating to the respiratory organs.

* Read at the meeting of the A. P. A., in answer to query No. 68: "Some notes concerning the carbolic acid made in America."

GINGER IN "SOLUBLE ESSENCE."

BY LUTHER F. STEVENS, OF BROOKLYN, N. Y.

THE published accounts of the work done by Mr. Thresh, of London, in his studies upon ginger proved exceedingly attractive to the present writer, and one dull afternoon, some years ago, while running through that gentleman's experiments, the thought would obtrude itself upon the brain, that if in the second stage of his operation "lime or magnesia" was disadvantageous, perhaps it might be also in the first, although he there uses it to throw down the resins. This idea led on to the further query: Why should not water alone be a sufficient precipitant? Thence followed trials and detailed experiments which eventuated in the proof to the writer's mind that it was possible to easily produce, by a simple process, a truly soluble essence of ginger, readily miscible with any ordinary diluent, and yet representing all the grateful portions and the real therapeutic values of *Tinctura zingiberis*, Ph. 1870, and greater than the tincture of 1880, in the same doses, and at a less prime cost.

Mr. S. A. D. Sheppard, who has contributed much to the history of ginger, in answer to a query before the Mass. State Pharmaceutical Association, June, 1885, recites the successive attempts at a soluble essence, mentioning, successively, B. Proctor, of England, or the alum process, where the resins are partly precipitated, partly broken up by sulphate of alumina.

Creuse's, or the magnesia plan (also at first adopted by Thresh without credit to Creuse), where the concentrated alcoholic tincture is treated with magnesia, filtered, and then evaporated to increase the strength.

Carl Rube's process, or the scrap filter-paper method; getting rid of the alcohol by evaporation at a very low temperature, and then dissolving as much as possible of the remainder in aqueous medium.

Also Thresh's later process; all resins precipitated by air, hydrated lime, freeing from lime by an acid, and then clearing and fining the product.

Another method still, and one used by some manufacturers of bottlers' supplies, is simply to saponify the resins in the usual way by means of a strong alkali.

None of these are exactly satisfactory; some attempt too much, some are deficient in aroma, some, if still hot, are open also to the objection of a soapy chemical taste and smell.

So brother Sheppard concluded, and correctly, that, owing to the peculiar constituents of Ginger, no preparations from it could be made which will mix readily with aqueous menstria and still accurately represent the drug.

To Mr. Thresh is due the great credit of the discovery of gingerol, which had been suspected by Prof. Buchheim during his experiments in 1873, but has not up to the present time, so far as I can find from any publication, been isolated.

The oils and resin had been well known since the study put upon the article by our own Proctor when he devised a fluid extract.

Thresh finds in ginger a hot pungent resin, a secondary less active resin, an active principle gingerol, a volatile oil, a heavy oil, wax, fat, gum, coloring matters, etc.

We wish to save nearly all of these except the first hot resin. Therefore, into a half-gallon bottle put the following:

Fluid Ext. Ginger.....Oz.
Powd. Pumice stone..4 oz. avdp.
Water.....Oij.

Pour the fluid extract into the bottle, and add to it the pumice; shake well occasionally during several hours, and then slowly add the water in portions of about four fluidounces, with plentiful agitation, and alternate periods of rest and subsidence. Continue this at intervals during twenty-four hours, then filter, and upon the mass in the filter pour water until three pints are obtained, or until the three pints of partly alcoholic liquid originally mingled are pushed through, without allowing much water to pass. If the filtrate thus obtained is not quite clear, it may be shaken with a little more pumice or a very little clean talc; the latter, however, must be used with care, as it is a magnesium compound, and may produce a noticeable effect upon the delicate flavor we seek.

The finished product is a delightful representative of the ginger minus the hot taste. It has the full aroma, and, taken internally, is a prompt and rapid diffusible stimulant without after-reaction.

It is of light straw color (the color varying with different samples of powdered root), darkens slightly upon standing, and by deposit of a little resin becomes in time a little cloudy.

The water here does the precipitating, throwing down from the strongly alcoholic solution the dark resin and some of the coloring matters.

The inert separating material prevents the agglutination of the precipitate into flakes and lumps. The alternate agitation, rest, and subsidence enables the new dilute spirit to dissolve nearly every essential portion except the alpha resin.

Mr. Thresh, in 1882, tried the water and pumice plan, but dumped the whole together at once, and, after rapid agitation, filtered, when he found so little aroma in the product that he abandoned the plan, missing one of the necessary points of the manipulation, viz., an allowance of time for the exchange of solvents from strong to weak spirit.

Aluminates, any alkali, even the alkaline earths or their carbonates, are detrimental to flavor and aroma. Thresh proved that this was because the two principles—volatile oil and gingerol—are very readily broken up; the latter particularly being super-sensitive to rough treatment. Heat drives off volatile oil, ether only may be distilled from a solution containing it; ethereal extract of ginger may be freed from the ether, which distills at 98° to 100° F. (37° C.), but shortly after that has passed the oil comes over by itself. In distilling mixtures of various alcoholic strength, the volatile oil begins to come over with the very first portion of spirit at 180° to 185° F. (78° to 80° C.), and continues until the aqueous vapor rises at 211° to 213°, by which time all the volatile oil has escaped from the flask. If the heat is continued up to 220° to 225° F. (104° to 107° C.), the remaining gingerol begins to suffer decomposition; it will even commence to break up by long boiling with water.

Some preliminary points need noting here: the ginger used should be true "Jamaica," because the volatile oil from that variety is far pleasanter than when obtained from African or Chinese (Cochin ginger), and besides, both the other kinds have far more of the resins which we seek to eliminate.

The fluid extract should contain no glycerin, is preferable when freshly prepared, and should not have been heated in the process of manufacture, because there will have been loss of essential matters.

The powdered pumice, as obtained in the market, has sometimes a little starchy matter from the mill, and sometimes a portion of impalpable powder, either of which go through the filter, but can be removed by the second shaking, as before spoken of.

Powdered silica may be used in place of pumice. Kaolin, fuller's earth, or talc are not advisable.

Endeavors to increase the strength of the finished preparation, that is, to make it represent more than 33% of the soluble portions of the fluid extract, are not economical, as there is loss of gingerol upon the filter; and increase of alcoholic strength causes more resin to pass through, which afterwards is slowly deposited.

That the soluble essence as thus produced contains volatile oil is proved by distillation, or, easily, by throwing a teaspoonful upon the surface of hot water in a cup, when it becomes evident to the nose. That it contains essence of ginger or gingerol is proved by physiological test—by swallowing some, when shortly a genial glow is felt extending throughout the circulation.

The mass remaining upon the filter, if dried and washed with alcohol, yields a solution of hot resin of value for cooking, or for the delectation of "old drunks." If the alcohol is recovered by distillation, it is found to be sweet, clean, and pure, fit for any purpose, which shows that no volatile oil clings to the filter, and the resin will be left behind thick, black, and hot, and about 3 fluidrachms of it form 16 Troy ounces of Jamaica ginger; the sample shown weighed 177 grains, a little over 2%. (Thresh averages about 2%.) Without doubt, there will be plenty of use found for it.

The pumice may be regained after washing, white and handsome, ready to be used again; so that this seems to be the Frenchman's ideal process where nothing is lost.

In the distillation of the alcoholic washings, if the heat be pushed at the last, after the spirit is all off, a pungent smell is noticed for a few moments in the air immediately surrounding the apparatus; but nothing condenses in a Liebig condenser supplied with cold water, showing that a trace of gingerol hangs on to the last. Thresh has found it difficult to entirely free the resin from gingerol.

Of this soluble essence, 50 C.c. was evaporated at a gentle heat in a weighed capsule until weight ceased to be lost; it gave a total residue of 21, which, doubled, equals .42, or a little less than $\frac{1}{2}$ of 1%.

To prove the presence of volatile oil, 50 C.c. was distilled until all spirit had passed over, and collected in an iced receiver. It has the smell of the oil, fragrant, but slight taste.

The residue is aromatic, aqueous, cloudy, and warm. To find when the oil comes over most freely, 50 C.c. was distilled to dryness, the Liebig condenser iced, and the products received in succession small portions of about 5 C.c. in small iced receivers.

Distillation commenced with No. 1 at about 185° F., No. 2 at about 200° F., No. 3 at about 203° to 212° F. Each of these smelled strongly of the volatile oil, the No. 1 much the most so. With No. 3, all the spirit had come over, and with it all the aroma. Successive numbers caught only aqueous matters of little smell or taste until No. 7, at 213° F., which begins to have a peculiar smell, partly pungent of ginger and partly burnt—evidently some of the gingerol and its products in aqueous solution. This continued up to dryness in Nos. 8 and 9, at 225° F. The residue in the flask dissolves part of it in alcohol, and is pungent and hot to taste, empyreumatic to the smell. Part dissolves only in water, and is pungent to the taste, aromatic and tarry to the smell. The first contains some resins, some products of gingerol, and some gingerol. The second, considerable crude gingerol, some tarry matters soluble in water, but no resin.

From the original fluid extract there was taken 50 C.c., and distilled

in the same manner as above, and at same heats, except that about 3 fluidrachms were received at once in iced homoeopathic vials. The spirit oil came over smelling of volatile oil, the first the strongest; but no taste developed until No 4, nearly the last of the spirit, and No. 5 (about 1 fluidrachm), which smells and tastes of the gingerol. No. 6 ($\frac{1}{4}$ fluidrachm), is aqueous, with a drop or two of apparently the terpene, or else a heavy oil. It has little taste, but a strong burnt smell. The residues were charred so much as to produce only decomposition products—creasote and coal. This cursory examination, pharmaceutical in its character, and not strictly analytical, seems to prove that this product contains all the volatile oil or aroma, all that is possible by any process of the gingerol or active principle and a small portion of the flavoring resins, and is minus the hot resin and most of the coloring.

DETERMINATION OF MELTING POINTS.*

BY HENRY C. C. MAISOH.

A PHARMACIST has many compounds of different properties to work with. A method for the determination of melting points used with one of those compounds may work well, while it can be used in few others. We must consequently use a method which best suits the subject under consideration; thus phosphorus could be melted under water, while the different camphors can be melted on mercury. From the above remarks it can easily be seen that the best manner of treating the subject of melting points would be to class those articles together whose melting point could best be determined by the same method. The headings under which I propose to consider the different methods are as follows: Class I. Camphors, Resins, Waxes, and Alkaloids; Class II. Fats; Class III. Subjects not easily oxidized; Class IV. Subjects easily oxidized in contact with air.

Class I. Camphors, Resins, Waxes, and Alkaloids.

The method which I would advise being used for this class is the following: A small beaker is filled two-thirds full of mercury, into which a thermometer is suspended so that the mercury just covers the bulb of the thermometer. A small quantity of the article under examination is placed directly on the mercury and kept as close to the thermometer as possible. Heat is then gradually applied, so that the rise of the mercury in the thermometer does not exceed two or three degrees Fahrenheit a minute. When the first indications of melting are visible, note the number of degrees and carefully regulate the heat so as to keep the temperature stationary at this point for a little time, to see if the whole quantity will melt. If the article under examination does not melt completely, again very carefully apply heat until the whole quantity is melted to a transparent liquid. The temperature at which this takes place can be regarded as the melting or fusing point near enough for all practical purposes, though, if greater accuracy is required, it is first necessary to examine a body with a known melting point, under the same conditions as are those when examining the body with the unknown melting point. We obtain thus the ratio of variation in this particular instance, and the required melting point can then easily be obtained from the given data. This comparison can be used in all subsequently named classes.

Class II. Fats.

The above method can be used here also, but it will not give such satisfactory results as the following: A small thin glass tube is drawn out very fine, and the melted fat then sucked up into the tube, the capillary portion of which is melted to a point. The part to be used is then laid aside for two or three days in a cool place. The tube is attached to a thermometer by means of a rubber band in such a manner that the capillary portion is as close to the bulb of the thermometer as possible. The apparatus is then placed so that the liquid, either water or sulphuric acid, just covers the bulb of the thermometer. Now gradually apply heat, being careful about the rise of the mercury in the thermometer. The melting point is that degree at which the column of fat is transparent. Another method is to have the capillary tube open below, and noting the temperature at which the fat is pressed upward in the tube. This latter method does not give as accurate results as the former, some fats becoming entirely soft before they are melted, but it can be used to good advantage in determining of the melting points of some resins.

Class III. Subjects not easily oxidized.

The method given under Class I. can be used here, but only in such cases where no reaction takes place. Where this method cannot be used, we must resort to the sand-bath and a thin porcelain capsule. The temperature registered by the thermometer will be several degrees too high; as a correction we can use the comparison mentioned under Class I.

Class IV. Subjects easily oxidized in contact with air.

Subjects under examination, like sulphur, phosphorus, and others which easily burn or oxidize, or in which there takes place dissociation or other chemical change when heated in air, must be melted in some liquid in which the article under examination is not at all or only very slightly soluble, and with which no chemical decomposition takes place. The best manner in which to apply this method is to suspend a piece of the substance in the liquid, and keep the bulb of the thermometer as close as possible to it. This method has been tried by Gerardin (*Compt. Rendus*, 1863, LIV., 1,083) with sulphur and phosphorus in different media, and the melting point was found to be invariably 111.5° C. and 44.3° C. respectively.

At various times, descriptions of apparatus for the determination of melting points have been published. Dragendorff (*Analyse der Pflanzen*, 1213) does not apply heat directly to the beaker spoken of under Class I. He allows the rim of the beaker to rest on the top of a filter dryer, and covers the whole with a bottle, the bottom of which has been taken out. The thermometer is suspended through the neck of the bottle, and is there fastened by a cork. The whole apparatus stands on an iron plate, the filter dryer being of such a height that the beaker does not rest on the plate. Heat is now applied gradually to the iron plate, carefully regulating the temperature.

Another form of apparatus has been described by Gustav Oldberg (*Rep. d. Ana. Chem.*, 1886, 94).* The apparatus consists of two glass tubes of different diameters. A bulb is blown into one end of the narrower tube, and the tubes then connected above and below with each other by two glass tubes, the upper one being the wider, and being attached somewhat slant. The apparatus is then filled with water or some other liquid so as to almost fill the upper connecting tube. A thermometer with the subject under ex-

amination in a fine glass tube is then adjusted so that its bulb is in the bulb of the apparatus. The liquid in the apparatus is then heated gradually in the wide upright glass tube.

Authors vary very much in regard as to which point shall be taken as the melting point. F. Rudorff (*Pogg. Ana.*, 1870, 140, 420) holds that the congealing and melting points are identical, and that the temperature at which the subject congeals shall be regarded as the melting point. Other authors, opposed to the foregoing, hold that the congealing and melting points are at different temperatures.

In conclusion, I would like to make a few remarks as to the value of the melting points given in the Pharmacopœia. Melting points should not be given in the Pharmacopœia, except in such places where they are necessary for testing the purity of articles, for example, in the cases of glacial acetic acid, oil of theobroma, petrolatum, etc. The melting points of the various alkaloids and several other articles are entirely out of place in the Pharmacopœia, these only belong to the text-books.

DIOSCOREA BULBIFERA.

BY J. U. AND J. G. LLOYD.

WE submit herewith, as a curiosity, to the members of the American Pharmaceutical Association a specimen of the aerial tubers from the *Dioscorea bulbifera* L. The plant is a native of Ceylon, but it is now cultivated in some parts of the Southern States. The specimen submitted herewith was obtained through the courtesy of Dr. J. F. Walker, of New Orleans.

Numerous species of *Dioscorea* are cultivated in tropical countries for the tuberous roots, which are edible, containing a large proportion of starch. The *Dioscorea sativa* is the most common one in the Southern States, as the tubers are highly relished by the negroes, who call them *yams*. We have also a native species of *Dioscorea*, the roots of which do not bear tubers, but on the contrary are very hard and woody, and are used in medicine under the name of colic root or wild yam. The interest attached to the tubers presented are that they are borne above the ground. For while a large number of plants have subterranean tubers, but very few bear them on the stem. We have a species of lily, also a few other plants that have this habit, but it is comparatively rare in the vegetable kingdom.

Lotion for Rhus Poisoning.—Dr. E. Mommson, of Bloomington, Ill., writes to the *Medical Record* that immediate relief to the patient poisoned by *Rhus venenata* followed the local use of

Carbolic Acid.....gr. x.
Boric Acid (powdered)..... 3 ij.
Vaseline..... 3 i.

M. Apply two or three times daily.

Cuticura ointment is reported to consist of a petroleum jelly, colored green, perfumed with bergamot, and containing 2% of carbolic acid.

"Trinitrine" is the name adopted in many European localities in prescribing nitro-glycerin, in order to avoid alarming nervous patients.

The Volta Prize.—The Volta prize of 50,000 francs will be awarded by the Paris Academy next year for the most worthy discovery in the province of electrotechnics in its application to chemical, technical, or therapeutic uses. The theses must be presented by June 30th, 1887.

* Read at the meeting of the A. P. A.

* Described and illustrated in this Journal, July, 1886, p. 124.

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EDITORIAL.

DISPENSING DOCTORS.

"I HAVE read with satisfaction your editorial on 'Counter Prescribing' in the last AMERICAN DRUGGIST. Now, do you not think *something* should be said for the benefit of the patrons of the DRUGGIST on 'Physicians Dispensing their own Remedies,' which they buy of the druggist at greatly reduced prices and give to their patients; thus 'doing' the amiable druggist out of his legitimate profit?"

"*'Ne sutor ultra crepidam.'*"

UNQUESTIONABLY, something may be said on the subject referred to by our correspondent, and in the first place let us understand that, while the law of the State of New York confines the practice of medicine to legally qualified and licensed physicians, dispensing is not restricted, in the same way, to legally qualified and licensed pharmacists, for the law regulating the sale of medicines makes an exception in the case of physicians dispensing medicines to their own patients. In the case referred to in our last issue, it was the presumption that the law had been violated that led to the proceedings before the court. To completely reverse the situation, as our correspondent seems to have intended, we should have a suit brought by a pharmaceutical association against a physician for selling medicines to other persons than those who are his patients. Now, no publication has been made of such a practice carried to a degree that would warrant complaint on the part of

pharmacists or, much less, a suit for enforcement of the pharmacy law.

Second.—Respecting the custom of physicians dispensing, themselves, the remedies they use in their practice, it may be safely presumed that three-fourths of the doctors of this country do so. Perhaps a smaller proportion of doctors in New York State follow this custom, but it is certainly the case that they are in the majority. Those who write prescriptions for nearly everything which they administer are to be found only in cities. Even in towns and villages of considerable size, where good pharmacists can be found, the custom of physicians dispensing is to a great extent in vogue; and even in cities there are to be found many physicians who do so as a rule, prescriptions being written by them only when something out of the ordinary is demanded, or when external applications are desired.

Doubtless the proportion of those who dispense as well as advise is growing less in some localities, but we suspect that the practice among manufacturing pharmacists of sending circulars and agents directly to physicians, and of preparing remedies in such forms as pills, tablets, granules, pills, troches, divided powders, capsules, fluid extracts, etc., tends very largely to encourage dispensing by doctors even in the larger cities.

The conditions of the practice of medicine and of the drug trade must undergo a very decided change before the present state of affairs in this regard will be altered. In sparsely-settled regions the doctor must always be his own dispenser, and he will purchase his medicines either from the nearest retail pharmacist, or of a wholesale house, in trade packages, and in the latter case at as low a rate as they can be obtained by the pharmacist. A short time since, during the height of the excitement over rate-cutting among retail pharmacists, some attempts were made to prevent sales to physicians by wholesale druggists, but we are not aware that these efforts were successful.

Respecting the custom referred to by our correspondent, of physicians purchasing remedies of the druggist at greatly reduced prices and giving them to their patients, we can hardly believe that such instances are sufficiently numerous, or the amount of medicine so given away so valuable as to seriously affect the welfare of the druggist. It is probable that greater damage to the interests of the latter would follow a practice of having a druggist fill prescriptions for which the physician pays a low price, and which he furnishes to his patient at the same low price. This, however, involves an amount of trouble without corresponding profit, not likely to be undertaken by a physician in much demand, and is only likely to occur under extraordinary circumstances—circumstances which would warrant the exercise of some degree of charity, perhaps, on the part of the pharmacist.

It is a very proper practice among many pharmacists, when called upon by a physician to prepare a prescrip-

tion for which the physician has to pay, to inquire whether it is for his *personal* use or for a patient. In the former case, the amount charged will depend very largely upon their personal relations, whereas when the medicine is for a patient, and is to be paid for, the full price is charged. It certainly indicates a remarkable disregard, on the part of a pharmacist, of his own interests and the interests of his calling if he is willing to habitually sell drugs to any person who is not in needy circumstances for what they cost, and take no account of the value of professional services rendered in compounding them. Even when medicines are supplied in bulk to physicians who dispense them, the pharmacist who does so should derive *some* profit from the transaction.

What the doctor chooses to do with his remedies after he has bought them becomes, then, his own affair. If he sells them for what he can get, his practice resembles that of every other dealer. If he prefers to give them away—that is also his business.

ALLIED to this subject is that of paying a percentage to doctors on the prescriptions ordered by them; and upon this there can be but one honest opinion. The doctor who exacts such a percentage and the apothecary who pays it, both deserve to be driven from any community. Neither should receive the patronage or society of decent people.

John Wyeth & Bro., of Philadelphia, have secured the conviction in a Brooklyn court, of James Crosher, who in company with others have for some time past been selling fraudulent imitations of the wares manufactured by that house. Crosher was fined \$200, or imprisonment for 200 days if the fine is not paid.

DR. CLEMENTE FORETTI, late Prof. of Chemistry and Pharmacology at the University of La Paz (Bolivia), claims to have proof that in 1857 Prof. Enrique Pizzi, of La Paz, isolated the alkaloid of coca leaf—two years before it was discovered by Niemann, the German chemist. Foretti has not only documentary evidence, but also specimens of the cocaine made by Pizzi in 1857.

DR. BROADBENT, of London, in a recent address before the British Medical Association, called attention to the injurious effects which follow the prolonged use of colchicum by gouty persons, and the consequent increased arterial tension which it induces. He pointed out the necessity for clearing the system after the colchicum has been used for a time, by the administration of alkalies.

DR. G. BELL, of Indianapolis, commends papayotin as a solvent for diphtheritic membrane. He blows it into the larynx by means of a glass tube of suitable size, to which a piece of small rubber tubing serves as mouth-piece.

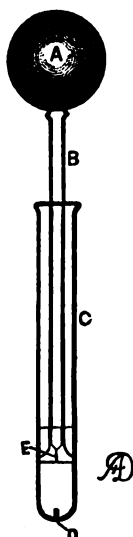
BENZOATE of sodium to the amount of 300 grains daily is recommended as a remedy for erysipelas. The temperature generally falls to the normal within forty-eight hours, and the desquamation is unusually rapid.

* The shoemaker should not go beyond his last.

WOLPERT'S AIR-TESTER.

S. W. ABBOTT, M.D., secretary of the S. Massachusetts State Board of Health, describes in the *Boston Med. and Surg. Jour.* a method introduced by Wolpert* for ascertaining the quality of the air of inhabited apartments. The instrument consists of a simple rubber bulb (A), of a capacity of 28 C.c., a glass outlet tube (B), with a constricted extremity (E). A glass test-tube (C), 12 centimetres in length and 2 centimetres in diameter, has a horizontal mark near the bottom, indicating the point to which it must be filled with perfectly clear lime-water to contain 3 C.c. The bottom of the tube is whitened, and has a black mark (D) stamped upon it. A small wooden stand, a brush or swab, a vial of vinegar for cleaning the tube, and a bottle of clear lime-water complete the outfit.

In order to use the instrument, the lime-water (a saturated solution) should be poured in the tube to the mark. Press the bulb with the thumb to expel the air as quickly as possible, and allow it to fill with the air of the apartment, insert the small tube into the lime-water nearly to the bottom, and again expel the air with moderate rapidity, so that the bubbles may rise nearly to the top of the tube, but do



Wolpert's air-tester.

not overflow, taking care to continue the pressure of the thumb till the small tube is removed from the lime-water. Repeat this process until the mark upon the bottom of the test-tube is obscured by the opacity produced by the reaction of the carbonic acid upon the lime-water, the observer looking downwards through the lime-water from the top of the test-tube.

With very foul air, it is necessary to examine the mark after filling and discharging the bulb a few times only; with good air, it must be filled twenty-five times and upwards.

The bulb represented in the cut is made a little larger than the required capacity, since a small amount of residual air usually remains in the bulb and cannot be expelled without great care.

After each observation, the test-tube must be washed out and wiped dry. If a white incrustation forms upon the tube, it may be easily removed with a little vinegar, after which the tube should be thoroughly washed with pure water and dried.

If the mark becomes obscured after filling the bulb ten or fifteen times only, the air of an apartment is unfit for continuous respiration.

In a sick-chamber, the air should be so pure that the turbidity of the lime-water will not render the mark invis-

ible until thirty or forty fillings are made.

The instrument should be used by daylight, over a white ground, as a sheet of writing-paper, and care should be taken not to vitiate the result by the observer's own breath.

The following approximate table is taken from the article by Professor Wolpert, the first column representing the number of fillings of the bulb, and the second column the parts per 10,000 of carbonic acid in a given sample of air.

Number of Fillings.	Carbonic Acid per 10,000.	Number of Fillings.	Carbonic Acid per 10,000.	Number of Fillings.	Carbonic Acid per 10,000.
1	200.	21	9.5	41	4.9
2	100.	22	9.1	42	4.8
3	67.	23	8.7	43	4.6
4	50.	24	8.3	44	4.5
5	40.	25	8.	45	4.4
6	33.	26	7.7	46	4.3
7	29.	27	7.4	47	4.2
8	25.	28	7.1	48	4.1
9	23.	29	6.9	49	4.1
10	20.	30	6.6	50	4.
11	18.	31	6.4	51	3.9
12	16.	32	6.3	52	3.9
13	15.	33	6.1	53	3.8
14	14.	34	5.9	54	3.7
15	13.	35	5.7	55	3.7
16	12.5	36	5.5	56	3.6
17	12.	37	5.4	57	3.5
18	11.	38	5.3	58	3.5
19	10.5	39	5.1	59	3.4
20	10.	40	5.	60	3.3

Sending Liquids by Mail.—The following is an abstract of Order No. 135, by the Post-Master General: Liquids and oils (not to exceed four fluid-ounces), pastes, salves, or articles easily liquefiable, must be inclosed in a wooden or *papier maché* block, not less than three-sixteenths of an inch thick in the thinnest part, strong enough to support the weight of mails piled in bags and resist rough handling. Between the bottle and the block must be some absorbent, such as cotton, felt, asbestos, cork crumbs, in order to prevent damage to other parcels. The top of the block must have a metal or wooden screw lid fitting tightly and have rubber pads. Articles not liquid must be placed in a bag, box, or removable envelope or wrapping made of paper, cloth, or parchment, and placed within a box or tube of metal or wood with sliding clasp or screw lid. If the articles are liable to break, there must be some elastic packing between the inner package and the box or tube in which it is mailed. Ethereal or inflammable articles are excluded.

Oil of Turpentine is highly recommended by Dr. L. Eliot, of Washington, D. C., as a remedy for aborting mammary abscess. Immediately upon the discovery of a tender, hard spot in the gland, it is to be bathed with oil of turpentine, and a piece of rag or flannel saturated with it is to be applied. The child should be allowed to nurse less often from the affected breast, and, as a rule, the trouble will disappear in two or, at most, three days.—*Med. Record.*

Anodyne for Irritable Bladders.—W. P. Copeland, of Eufula, Ala., says that the irritable bladder commonly met with in old men who have an enlarged prostate may be relieved by injecting, through a soft catheter:

Benzoate of Sodium...gr. x.
Tinct. Gelsemium...gtt. xx. ad gtt. xxx.
Water..... $\frac{1}{2}$ i.

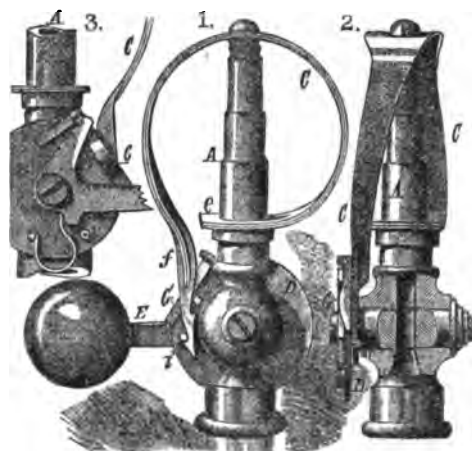
Warm before injecting, withdraw the catheter, and allow it to remain in the bladder twenty to thirty minutes. The catheter may be reintroduced to facilitate the escape of the remedy.—*Med. Record.*

AUTOMATIC SHUT-OFF FOR GAS BURNERS.

ON page 83 of our last May number we gave an illustration and description of an automatic cut-off for gas burners, which is intended to prevent accidents in laboratories.

The principle involved in the construction of this apparatus—which is itself an improvement of another previously illustrated by us on page 67 of our volume for 1884—is very similar to that which underlies the automatic shut-off for ordinary gas burners lately patented by W. W. Sherman, of 316 Fourth street, San Francisco (*Scient. Amer.*, June 12th), and which is here illustrated.

The compensating spring C is composed of an outer brass spring and an inner steel spring united, and is bent to pass up over or in proximity to the top of the burner, and its free end is formed with a catch, f, having notches upon opposite edges, one above the other, that engage, but not simultaneously, with the pins i, m on the plate D, secured to one end of the cock. The pins are at a slightly greater distance apart than the notches. Pivoted to the cock is a weighted lever E, which is held against the outside of the plate by a spring O, a bent arm of the lever resting against a fixed stop or upper end of a cam-shaped lever G, arranged



Automatic shut-off.

to come in contact with the free end of the spring. When the cock is closed, the lever E occupies a vertical position with its weighted end down. Upon raising this lever to a horizontal position—the plate D turning with it—the pin i is caused to engage with the lower notch, while the pin m will be out of engagement with its notch. The escaping gas may now be lighted. The heated spring contracts, owing to the different rates of expansion of the two metals composing it, when the outer notch will free itself from the pin i, and the inner notch will engage with the pin m, thereby preventing the cock from closing. Should the gas be extinguished by accident, the spring, upon cooling, will expand, free the notch from the pin m, and allow the lever to drop and shut off the gas by turning the plate attached to the cock. To extinguish the flame by hand, the lever E is simply depressed, when its bent arm presses the pivoted cam-piece G against the spring C to force the catch from engagement with the pins, and permit the lever to close the cock.

Narcœine has been found by French physicians to be an excellent remedy in whooping cough—surprisingly quick results having followed its use. The best mode of administering it is in a syrup of which a teaspoonful represents one centigramme of the drug. This is the minimum dose for a child, the average being two and one-half to five centigrammes.—*Med. Rec.*

* Einfache Prüfung der Luftreinheit in Wohnräumen, von Dr. Wolpert, Prof. in Kaiserslautern. Centralblatt für Allgemeine Gesundheitspflege, Vol. II., p. 291.

The Sceptic.

A CORRESPONDENT writes:—The great opponent to all progress in therapeutics is the sceptic. He never loses an opportunity of stating that he does not believe in therapeutics, "if there be such a thing." He publishes a book on medicine, and ostentatiously leaves out all reference to treatment. He declares openly that he does not know of any disease or morbid condition which can be influenced in the slightest degree by drugs. He does not credit any statements as to the good effect of iron in anæmia, and scoffs at the idea of mercury being of the slightest practical value in the treatment of syphilis. He has a deeply rooted antipathy to phosphorus and arsenic, and considers any one who prescribes them either a knave or a fool. In lecturing on the uses of such a drug as digitalis, he tells his audience that the dose of the infusion is from a teaspoonful to a bucketful; "it is all the same." When called upon to treat a case of poisoning, he advocates "expectant treatment," and is decidedly adverse to antidotes on principle. The sceptic is not, as a rule, well read; he is apt to think that every drug with which he is not familiar—and they are many—must needs be "an American quack remedy." The term "pharmacology" is not familiar to him, but he thinks it "has something to do with dispensing." By a curious coincidence, he is to be found on all hospital committees, and takes the greatest interest in the appointment of the lecturers on materia medica, preferring the candidate who knows least about it, on the ground that he will have no preconceived ideas. The sceptic probably commenced life as a pathologist, but, after a variable period of time, has lost faith even in that. Having thrown his medical studies aside, he devotes his energy and attention to recondite works on philosophy. He gradually develops a disbelief in any future, and is doubtful about the past. At his necropsy, in which he possibly regrets being incapacitated from taking a part, a gumma is found in his brain, for which, years before, he had declined to be treated. Such are the men and the minds who so persistently oppose all progress in therapeutics. Unfortunately, their influence, pending the fatal termination, is often extremely prejudicial to any advance, and acts as a damper to the more enterprising and restless spirits, who, imbued with the enthusiasm of their calling, seek to obviate the present imperfections in our means of diagnosis and treatment, and have the courage of their opinions. The most disastrous effect is thus produced on the minds of students, who are only too glad of an excuse to avoid the arid and difficult manipulations and study necessary to an intelligent comprehension of the facts at issue.—*British Medical Journal*.

Dangerous Lemonade.—A style of lemon-squeezer has been recently sold quite extensively which is made of galvanized iron, or iron covered with a coating of zinc. A word of caution should be given against the use of such articles, as the citric acid of the lemon will readily dissolve the zinc, forming unwholesome and poisonous salts. Lemon-squeezers should be made either of plain iron or wood, or, better, like some we have observed, where the surfaces brought into contact with the fruit are of glass or porcelain. Zinc is a metal which is readily attacked by the weakest acids, and no article of food or drink should ever be allowed to come in contact with it.

ALCOHOL is said to render croton oil less irritating but none the less effective.

The Strength of Spirit of Nitrous Ether.

A QUESTION of some importance to the medical profession came the other day before the Thames Police Court, when Mr. John Read Morrison, a practitioner, of 57 Cannon street, St. George's-in-the-East, who keeps a shop, was summoned for selling a quantity of spirit of nitrous ether not of the nature and quality of the article demanded, the drug being deficient in nitrous ether to the extent of eighty per cent. Mr. William Raines, sanitary inspector to the parish of St. George's-in-the-East, said that on June 10th, about 11 o'clock, he called at the shop and asked for two ounces of spirit of nitrous ether, which the defendant served him with, and for which he paid 8d. Witness then told him that it would be analyzed by the public analyst. The analyst's certificate showed that the drug was deficient in nitrous ether to the extent of eighty per cent. Mr. Young, who defended, submitted that there had been no offence. The article was pure, and the deficiency was caused by decomposition and evaporation. Mr. John Beckett, assistant to Dr. Tidy, at the London Hospital, said he had analyzed the sample of the drug submitted to him by the defendant, and found it to be pure. The nitrous ether was liable to decomposition and evaporation. There was certainly a deficiency. Every time the bottle was opened, some of the nitrous ether would go out. Mr. Hannay said it was too important a question for him to decide at once, and he adjourned the case for a week.

Cinchonidine in Quinine.—Recently the well-known quinologist, M. de Vrij, has brought to prominent notice the fact that large quantities of cinchonidine salts were present in some brands of foreign quinine, and his assertions, as contained in a communication made to the Pharmaceutical Society of Paris, caused it to take special action in the matter. A committee was appointed to investigate the facts, and recently the chairman, M. Jungfleisch, presented his report, which fully substantiates the claims of M. de Vrij.

The statement of M. Jungfleisch is that he found market samples which contained 8, 10, 12, and 16 per cent of cinchonidine. Quinine containing this salt was much more bulky—in fact, it is asserted that all the light bulky quinine of commerce is of this characteristic, viz., containing cinchonidine. He, therefore, advises that *all light quinine should be rejected*, and contends that *no pure quinine sulphate* can be made having the character of unusually light bulk. Of the intimate connection of these two alkaloids, it may be said that their pre-existence together in some barks makes it a difficult matter to separate them at times, and some samples of cinchonidine contained as much as 10 per cent of quinine.

To Distinguish Oleomargarine from Butter.—J. Horstler recommends the following procedure: A piece of oleomargarine the size of a hazelnut is placed in a test-tube, and the end made air-tight. Into another test-tube a like quantity of butter is treated in the same way. When both test-tubes are held in the hand, the oleomargarine soon liquefies, forming a clear solution; whilst butter requires double the time for solution, and when dissolved is not so clear as the oleomargarine solution. When the tube is filled one-third full with ether, the oleomargarine is easily dissolved, and does not produce any turbidity or precipitate on the addition of alcohol. Butter when treated in like manner yields a precipitate.

How to Cool a Cellar.

A GREAT mistake is sometimes made in ventilating cellars and milk houses. The object of ventilation is to keep the cellars cool and dry, but this object often fails of being accomplished by a common mistake, and instead the cellar is made both warm and damp. A cool place should never be ventilated, unless the air admitted is cooler than the air within, or is at least as cool as that, or a very little warmer. The warmer the air, the more moisture it holds in suspension. Necessarily, the cooler the air, the more this moisture is condensed and precipitated. When a cool cellar is aired on a warm day, the entering air being in motion appears cool, but as it fills the cellar the cooler air with which it becomes mixed chills it, the moisture is condensed, and dew is deposited on the cold walls, and may often be seen running down them in streams. Then the cellar is damp, and soon becomes mouldy. To avoid this, the windows should only be opened at night, and late—the last thing before retiring. There is no need to fear that the night air is unhealthful—it is as pure as the air of midday, and is really drier. The cool air enters the apartment during the night, and circulates through it. The windows should be closed before sunrise in the morning, and kept closed and shaded through the day. If the air of the cellar is damp, it may be thoroughly dried by placing in it a peck of fresh lime in an open box. A peck of lime will absorb about seven pounds or more than three quarts of water, and in this way a cellar or milk room may soon be dried, even in the hottest weather.

A Useful Plant.—Dr. Brandes, a Hanoverian physician, has recently demonstrated in a German contemporary the valuable properties of the *Anacharis Alsinastrum* Babingt. (*Elo-dea canadensis* Rich; *Anacharis canadensis* Planchon), a water-plant which has hitherto been considered as an unmitigated nuisance, choking up rivers, and entirely useless. Dr. Brandes has remarked that in the district where he lives, and where malaria and diarrhoea yearly appeared in a sporadic or epidemic form, those diseases have gradually decreased since the *Anacharis Alsinastrum* began to infest the neighboring rivers and marshes, and for four years have totally disappeared. He therefore proposes that the plant, which came originally from Canada, should be planted in marshy districts, with the view of checking malaria; and the experiment, in view of the evidence adduced in the article under notice, is certainly deserving of consideration.

Calabar Bean in Epilepsy.—Dr. Ruche (*Med. Zeit.*) recommends the trial of Calabar bean in epilepsy when the bromides and atropine have failed. Very curiously it has been found most efficacious when the dose is alternately increased and diminished. He uses the following formula: Extract of calabar bean, 7½ grains; spirit of ether, 75 minims; peppermint water, 5 drachms. Dose: 5 to 10 drops for children, 8 to 15 drops for adults, three times a day. The smaller dose is commenced with the first day, and one drop added each day until the maximum is obtained, and then the quantity is diminished by a drop each day until the minimum is reached.

The Liebig Monument Fund amounts to \$25,000, and the monument will be erected at Giessen, where Liebig first won fame as a lecturer on chemistry.

QUALITY OF THE BELLADONNA LEAVES OF OUR MARKET.*

BY A. B. LYONS, M.D.

A REPORT was made on the subject of this query to the Ohio State Pharmaceutical Association, which had not met at the time I accepted the query. I gladly avail myself of the material supplied by this paper, which is by Prof. Coblenz, a member of our Association, in addition to that which I myself have gathered.

Several processes for the assay of belladonna leaves have been published within a few years. The methods formerly adopted were more or less tedious, and required for their satisfactory execution a considerable amount of material.

The plan which I have for several years practised with satisfaction commends itself by its simplicity and rapidity. The drug is perhaps incompletely exhausted, particularly when it is rich in alkaloid, but comparative experiments have shown that for practical purposes the results are fairly trustworthy.

The belladonna leaves are reduced to about a No. 30 powder; I do not think it worth while to try to make a fine powder. Ten grains of the powder, accurately weighed, are introduced into a bottle or flask, and 100 C.c. of a mixture of ether 65 volumes, alcohol 5 volumes, and stronger ammonia 1 volume, is poured in, and the flask or bottle is at once securely corked. The mixture is shaken at intervals during 24 hours. At the end of that time, 50 C.c. of the clear supernatant fluid is measured out, transferred to a two-ounce prescription vial, and shaken with 5 C.c. of water containing about 10 drops of dilute sulphuric acid. Care is taken that the acid is in excess. When the aqueous fluid has separated, the ether is transferred to another similar vial, containing 5 C.c. of acidulated water with which it is shaken a second time to remove the last traces of alkaloid. When it has separated a second time, the ether is decanted into a receptacle for waste ether. By this mode of manipulation, the danger of loss of alkaloid by accident in decanting is avoided, and it is not necessary to wait for the subsidence of the minute particles of aqueous liquid, which do not separate at once.

The contents of the first vial are washed with two or three successive portions (10, 10, and 5 C.c.) of ether, which is subsequently used also to wash the contents of the second vial, and is then transferred to the waste ether bottle. When the washing is judged to be sufficient, ammonia is added to the contents of both vials in slight excess, and the alkaloid is taken up by shaking with a mixture of chloroform 1 volume, and ether 3 volumes, three successive portions of 15 C.c. being generally sufficient. The ether-chloroform is shaken first with the stronger fluid in vial No. 1, and then with the weaker, after which it is transferred to a capsule, and evaporated to dryness at a water-bath heat. The aqueous fluid is tested after the third washing, to make sure that it is free from alkaloid. This is done by placing a drop of the fluid upon the surface of a mirror, rendering it acid, and adding a drop of Mayer's reagent. If this produces more than a very faint cloud, the alkaline solution is to be made acid, then again rendered alkaline, and at once shaken with a fresh portion of the chloroform-ether.

When completely dry, weigh the alkaloid, and further demonstrate its purity by dissolving it in a little dilute sulphuric acid. If it is not wholly

soluble, separate the insoluble portion by taking up with ether, evaporate the ethereal solution, weigh the residue, and deduct from the weight of the crude alkaloid. However, if the operation has been carefully conducted, there will be scarcely a weighable amount of impurity.

A further check upon the weighing may be secured by titrating the acid solution of the alkaloid with Mayer's reagent, or, better, by precipitating with a slight excess of Mayer's reagent, and drying and weighing the precipitate, as recommended by Dragendorff.* This crude alkaloid may be purified by the method described by Dunstan and Ransom, but in practice the weight of the crude alkaloid obtained by the process described may be accepted as a sufficiently accurate measure of the value of the drug.

The alkaloid obtained by this assay process consists of a mixture of atropine and hyoscyamine. That these two alkaloids differ somewhat quantitatively, if not qualitatively, in their physiological and therapeutic action is probable, and hence we cannot expect that the results of an assay will enable us to fix to a nicety the dosage of the drug. Dr. Squibb has shown that, as a matter of fact, the mydriatic activity of different specimens of crude alkaloid obtained from belladonna leaf and belladonna root respectively do not exactly coincide. The variations in activity of the drug dependent upon such differences, however, are insignificant in comparison with the differences due to deficiency or excess of alkaloidal constituents.

The proportion of alkaloid present in belladonna leaf and root of good quality has been variously stated by different authorities. The following are a few of the results that have been reached by different investigators:

	Root.	Leaves.
Lefort, 1872..... young,	0.60	0.44
Dragendorff, 1874... old,	0.25	....
" " 1874.....	0.40	0.66
Buddel, 1882.amylaceous	0.40	....
" " to 1.0	....	....
" " 1882.non-amylaceous,	0.14 to 0.63	....
Gerrard, 1880-85.. 0.21 to 0.45	0.22 to 0.58	....
Dustan and Ransom, 1883-85.....	0.35 to 0.39	0.15 to 0.22
Dr. Squibb, 1885.. 0.42 to 0.50	0.26 to 0.34	....

A. M. Gerrard, in his report to the British Conference, has given results of numerous assays, arriving at the conclusion that the proportion of alkaloid in the leaf is greater than that in the root of the plant. The following are some of his figures:

Proportions of alkaloid found in belladonna leaf and root by A. M. Gerrard.

	Root.	Leaf.
Wild plant on chalky soil.....	.21	.23
" " " leaf mould.....	.09	.23
" " 27 years old.....	.26	.43
" " 3 " " ".....	.38	.41
" " 4 " " ".....	.41	.51
Cultivated, 2 " " ".....	.21	.32
" " 3 " " ".....	.37	.46
" " 4 " " ".....	.31	.49
" " in May.....	.21	.35
" " June.....	.32	.36
" " July.....	.32	.34

It is commonly believed that belladonna root is more active than the leaf, and, while the results above given must be accepted as true for freshly gathered specimens of the drug, it is probable that the popular belief has a good foundation, at least as regards the drug as it is met with in commerce. My own assays, given later, confirm those of Dr. Squibb in giving precedence decidedly to the root.

It has come in my way during the last few years to make numerous assays of belladonna leaves, and not

such as are offered in the New York market as of the first quality. The result of some of these assays will be given in connection with those that have been undertaken with more especial reference to the purpose of the present query. To ascertain whether the quality of the drug ordinarily sold in the drug stores is of fairly good quality, I procured from a wholesale dealer in this city a sample from his stock of leaves, and another of the pressed herb, of which he carried only one brand. From various retail drug stores I procured samples of the drug as ordinarily sold, without intimating the use I meant to make of it. The drug was kept by all the retailers, but only in pressed packages, and all the packages procured bore the name of the firm which sent them out, and no two were from the same firm.

I procured also from New York eight samples from importing houses and larger dealers. The results of assays of these various samples proved more favorable than I had been prepared to expect, particularly in the case of some of the pressed packages which were evidently several years old (Nos. 1 and 2 C. in the tabulated results below).

The market value of belladonna leaves is fixed at present purely by external characters. In the tabulated results I have given the comparative prices, in contrast with the figures showing true value. It is evident that large purchasers can afford to buy this drug by assay, unless the quality of the drug they handle is a matter of indifference to them.

The results reached in the assay of these samples were as follows (drug in the air-dried condition):

A. Samples from large dealers in New York:

No.	Per cent alkaloid.	Comparative price.
1	0.44	100
2	0.37	115
3	0.38	116
4	0.37	110
5	0.61	110
6	0.39	120
7	0.70	115
8	0.59	160

B. Leaves loose purchased in Detroit:

No. 1	Per cent alkaloid 0.40
" 2	" " " 0.29

C. Leaves in pressed packages:

No. 1	Per cent alkaloid 0.63
" 2	" " " 0.59
" 3	" " " 0.41
" 4	" " " 0.29

From the notes of assays that I have had occasion, within the past three months, to make of leaves offered in the New York market as of prime quality, I take the following data (drug in air-dried condition):

Belladonna leaf:			
No.	Per cent moisture.	Extract yielded to 66 per cent alcohol.	Per cent alkaloid.
1	9.55	20.5	0.42
2	8.15	19.0	0.41
3	9.52	30.7	0.42
4	7.98	35.5	0.41
5	10.24	23.	0.40
6	9.78	21.	0.68
7	8.92	2.98	0.51
8	9.31	24.3	0.50
9	9.45	25.8	0.55
10	8.77	21.0	0.49
11	11.42	16.2	0.42
12	9.35	19.5	0.48
Averages 9.36		23.5	0.474

The highest percentage observed by us was 0.87; the lowest 0.23; average, about 0.44.

Belladonna root:

No.	Per cent moisture.	Yields extractive to 66 per cent alcohol.	Per cent alkaloid.
1	9.2	30.3	0.86
2	8.4	24.7	0.42
3	6.7	25.4	0.62
4	8.8	26.3	0.77
5	5.7	31.8	0.64
6		26.6	0.72

* Read before the Amer. Pharm. Assoc.

* " Werthbestimmung einiger starkwirkenden Drogen," 1874, 24.

7	25.2	0.55
8	23.5	0.52
9	31.0	0.60
10	24.8	0.62
11	21.3	0.51
12	24.9	0.59
Averages 7.76	26.27	0.618

The following are the results of the assays made by Prof. Coblenz.* The samples examined were stated to include dry and pressed packages, as well as the loose German and Allen's English. Several of the American pressed packages were musty and contained a large proportion of stems. The quantity of alkaloid is stated to be that obtained from 100 grammes of dry drug. Either the decimal point has been misplaced, or this is a misprint for 10 grammes.

No.	Crude alkaloid.	Purified alkaloid.
1	.0179	.0171
2	.0095	.0090
3	.0205	.0182
4	.0439	.0433
5	.0405	.0398
6	.0050	.0030
7	.0117	.0109
8	.0092	.0090

No.	German leaves.	Purified alkaloid.
1	.0221	.0212
2	.0432	.0420
3	.0185	.0180
4	.0137	.0109

No.	English leaves.	Purified alkaloid.
1	.0426	.0422
2	.0417	.0411

SUMMARY OF CONCLUSIONS.

From the data furnished by these various assays we may conclude:

1. That belladonna is a drug subject to great variations in strength, so that of two samples rated as of equal commercial value, one may be of double the strength of the other.

2. That the proportion of alkaloid contained in good belladonna is higher than has been generally stated.

3. That belladonna leaves that have been kept in pressed packages for several years do not show evidence of loss of alkaloid. It is of interest, in this connection, to note that the best sample of pressed leaves examined was a very unpromising one, put up by the Shakers, and evidently quite old.

4. That while there is undoubtedly much belladonna of very inferior quality in the market, that which is offered as prime is generally fairly good.

5. That belladonna root, as met with in our market, is richer in alkaloid than belladonna leaf, and that the extract prepared from the root should also contain a larger proportion of alkaloid than that made from the leaf with the same menstruum.

Finally, I wish to urge the importance of fixing for such active drugs as belladonna, authoritative standards of strength, and of requiring that the official preparations of such drugs be brought, by official requirement, to a definite alkaloidal standard.

Inutility of Lime Salts.—The *Medical Record*, quoting the opinions of E. Logeais, Lehman, Heiden, Veiske, Dujardin-Beaumetz, Distage, Nothnagel, and Rossbach, says, "the practical conclusion that lime salts of all kinds are therapeutically useless, is one which deserves the attention of the many physicians who are constantly prescribing them in various conditions.

Toothache from decayed teeth is said by a Swiss authority to be relieved promptly by cotton-wool moistened with a mixture of equal parts of camphor and chloral and a fifth as much cocaine.

BUTTER AND ITS SUBSTITUTES.*

BY EMIL SCHEFFER.

FOR the last six months the attention of the public in general has been directed to butter and its substitutes, particularly by the agitation and acts of our last Congress. Every newspaper was full of oleomargarin, and therefore I hope you will not think harm of me when I bring oleomargarin into your meeting.

The writer of this essay does not intend to speak of the merits and demerits of artificial butters, but wishes to lay before you a method by which genuine butter can be easily distinguished and quickly examined.

The ingredients used in the manufacture of artificial butters are chiefly beef suet, lard, and marrow-fat oil. They are used in suitable proportions to obtain the consistence and melting point of genuine butter, and are churned together with fresh milk. Butter contains only a very small quantity of stearin, while the several other semi-solid and solid fats contain a larger amount, so that a greater abundance of stearin in butter is an indication that tallow or lard has been mixed with the butter either as such or in the form of oleomargarin or butterine.

The object was to find a suitable solvent by which not only the artificial butters can be easily distinguished, but which may serve also to ascertain if genuine butter was mixed with one or the other of these substances.

A liquid which shows a great difference in its solvent action on stearin on one side, and palmitin and olein on the other, might therefore answer the purpose.

After having tried different mixtures, I experimented at last with mixtures of rectified fusel-oil and stronger ether in different proportions, and at last accepted a liquid consisting of forty volumes of rectified fusel-oil and sixty volumes of Squibb's stronger ether.

Having procured genuine butter from different parties in the country, it was first ascertained how much of this solvent was needed and at what temperature a certain quantity of pure butterfat would be dissolved to a clear liquid. Butterfat was obtained by melting butter in the water-bath and decanting and filtering the liquid fat through filter paper in a glass funnel surrounded with hot water. The beaker with the filtered fat was placed in cold water and the fat stirred constantly until perfectly congealed to a homogenous mass. All the other fats experimented with were manipulated in the same way.

Of the above solvent 1 gramme of pure butterfat required 3 C.c. at 79° to 82° F. to be fully dissolved to a clear liquid, that is, of five samples

Of butterfat, 1 dissolved in 3 C.c. at 79° F.	
2 " " 3 " 80° "	
2 " " 3 " 82° "	

By its taste and general appearance, the butter, whose fat required the temperature of 82° F. to be fully dissolved, was considered the best, and therefore 82° F. was taken as standard for all the following experiments.

Before going further, the solubility of beef suet, leaf-lard, and cotton-seed oil was tested, and also pure stearin which I had prepared from tallow (melting point 144° F.). The experiments were executed in the way described further on; the temperature, after having reached 82° F., was kept constantly at this point.

0.2 beef-suet required, 10 C.c. or 1 Gm. required 50 C.c.
0.5 leaf-lard required 8.2 C.c. or 1 Gm. required 16.04 C.c.
2 C.c. cotton-seed oil required 8.5 C.c.
0.02 stearin required 11 C.c. or 1 Gm. required 550 C.c.

To find out if the presence of a more soluble fat would increase the solubility of stearin, 0.02 stearin and 1 C.c. of cotton-seed oil were melted together. After 3 C.c. of solvent were added and the test-tube with contents were immersed in water of 82° F., after a short time it was shaken and a clear liquid was obtained. Another 0.02 stearin dissolved in 1 C.c. of cotton-seed oil was, after addition of 3 C.c. of solvent, immersed in water of 65° F., and then set in a water-bath in which the temperature was gradually brought to 82° F. In this instance the stearin was not dissolved, and more solvent had to be added. It required pretty near the same amount as when stearin was tested by itself. It seems, therefore, that at a higher temperature (at 82° F.) the mixture of stearin and oil dissolves as a whole, while at a lower temperature the solvent acts separately, first on the oil and then on the stearin. 0.02 stearin, melted together with 0.98 butter, dissolve in 3 C.c. of solvent when immersed in water of 82° F., while, when first exposed to a lower temperature, then gradually heated to 82° F. it required 7 C.c. In this instance the stearin did not require as much solvent as in the experiment with cotton-seed oil; the margarin in the butter, no doubt, increased the solubility of the stearin.

On the department of stearin that, when mixed with other neutral fats, it requires more solvent than when gradually heated from a lower temperature up to 82° F., rather than when exposed to the temperature right away—my method of examination is best.

The experiments were made in well-corked small test-tubes, containing 1 Gm. of the fat or 0.5 Gm. according to quantity of fat, and 3 C.c. of solvent. They are immersed in a tumbler of water of about 65°, and the tumbler is placed in a double water-bath, heated with a very small flame, so that the temperature rises but very slowly. A thermometer is also placed in the tumbler. While the temperature increases, the test-tubes are shaken frequently, and when 82° F. is reached, care is taken that this temperature is kept constant. If not clear at this temperature, more of the solvent is added from a burette to the contents in the test-tube—according to the turbidity of the mixture 2 C.c. or 1, or 0.5, or even less at a time—until ultimately all is dissolved. The test is finished when the liquid has become quite clear, and by gentle shaking of the test-tubes no silky clouds of fine stearin crystals are seen floating upon it.

The following tests were made. The samples were obtained from regular dealers in our city, except the three last ones, which were kindly sent to us from a manufacturing firm in Chicago.

Gm.	of	at F.	Required of solvent.	Or one gramme required.
1.0	Country Butter..	82°	8. C.c.	8. C.c.
1.0	Creamery Butter..	82°	3. "	8. "
0.5	Oleomargarin. ...	82°	5.6 "	11.2 "
0.5	Butterine No. 1..	82°	5.5 "	11.0 "
0.5	Butterine No. 2..	82°	4. "	8. "
1.0	Oleomargarin....	82°	8.6 "	8.6 "
0.5	Neutral Lard....	82°	6.75 "	13.5 "
1.0	Oleo-oil.....	75°	3. "	8. "
2.0	Oleo-oil.....	82°	4.6 "	2.8 "

The numbers speak for themselves

* AMERICAN DRUGGIST, July, 1885, p. 127.

* Read before the American Pharm. Association.

from the difference in solubility between oleo-oil and oleomargarin. We may infer that the oleomargarin consists, for the greater part, of lard.

We may assume when 1 Gm. butter-fat is dissolved at 82° F. in 3 C.c. of the solvent, that the liquid is at this temperature saturated, if not with margarin, at least with stearin. The requirement of more solvent indicates a larger amount of stearin, or of stearin and magarin, and thus the presence of tallow or lard. The more solvent is needed to accomplish perfect solution the more of the admixtures are present.

It was now expedient to ascertain if this method could and might be used for the quantitative examination of spurious butter. For this purpose, butter and leaf-lard, in different proportions, were melted together, and after cooling, tested.

1 Gm. Butter	required at 82° F.,	3 C.c.
0.05 Leaf-lard	" " "	3.5 "
0.95 Butter	" " "	" " "
0.1 Lard	" " "	3.9 "
0.9 Butter	" " "	" " "
0.2 Lard	" " "	4.8 "
0.8 Butter	" " "	" " "
0.3 Lard	" " "	5.7 "
0.7 Butter	" " "	" " "
0.4 Lard	" " "	6.5 "
0.6 Butter	" " "	" " "
0.5 Lard	" " "	7.8 "
0.5 Butter	" " "	" " "
0.6 Lard	" " "	9.6 "
0.4 Butter	" " "	" " "
0.7 Lard	" " "	11.4 "
0.3 Butter	" " "	" " "
0.8 Lard	" " "	13.0 "
0.2 Butter	" " "	" " "
0.9 Lard	" " "	14.4 "
0.1 Butter	" " "	" " "

The quantity of solvent needed in these experiments is not proportionate to the respective quantity of lard and butter, but nevertheless there is a certain regularity in it. So from 5 to 40 per cent of lard in the butter, the quantity of solvent needed above 3 C.c. goes in almost a regular progression, and is such that, for each 10 per cent of lard, 0.9 C.c. more of solvent is needed above 3 C.c.

And from 40 per cent of lard up to 90 per cent, the total quantity of solvent is about the same as when no butter has been present, counting for each 0.1 Gm. of lard 1.6 C.c. of solvent (see the solubility of leaf-lard).

According to this table, butterine No. 1 would contain about 70 per cent, and butterine No. 2 would contain about 50 per cent of lard, which might not be far from being correct.

If a more soluble lard than leaf-lard was used for mixing with butter, the quantity of solvent used would indicate a larger percentage of lard.

By the butyric ether test, butterine can be easily distinguished from oleomargarin. For the qualitative examination of butter, this method recommends itself by its simplicity, by its easy execution, and by the quickness with which many tests can be made at the same time; and for quantitative examination it is for all purposes exact enough. When once an adulteration of butter is established, it does not matter much whether 5 per cent of admixture more or less are present.

DR. E. M. LYON, of Newark, N. J., uses the following formula as a remedy for whooping-cough:

Bisulphate of Quinine..... 3i.
Simple Elixir (U. S. P.). 3 iss.

M. A teaspoonful is given every three or four hours to children of 5 years and upwards, until cinchonism is produced; and the patient is then kept under its influence, according to the severity of the paroxysms, for two or three weeks. A lump of sugar saturated with lemon juice is given after each dose.—*Med. Record.*

OIL OF PEPPERMINT.*

BY ALBERT M. TODD.

IN the paper which I have the honor to present you, the history of the plant will be briefly noticed, and attention directed to some characteristics of the essential oil as observed in the practical manufacture, some being of such phenomenal nature as to invite further investigation.

Mentha piperita, from which the true oil of peppermint is derived, was first introduced or noticed in Hertfordshire, England, and given the name "peper-mint" by Ray in his "Historia Plantarum," published in 1704. Its commercial history dates from about the year 1750, when its cultivation was commenced in a very small way at Mitcham, in Surrey, England. Fifty years later the amount under cultivation was about one hundred acres, but the growers having had, as yet, no distilleries built, still continued to convey the plant to London for the distillation of the oil.

The industry in England reached its zenith about 1850, just one hundred years after its introduction, when the area cultivated was about five hundred acres, but, owing to successful American competition, it was reduced during the next fifteen years to about two hundred and fifty acres. From personal observation when visiting the peppermint districts of England in 1875, I attribute the success of American competition to a more perfect system of distillation and apparatus therefor (which I will again refer to), and the more healthful growth of the plants in our country.

Distillation of oil of peppermint was first accomplished in America by a Mr. Burnett, in the year 1816, in the county of Wayne, State of New York, who collected on the banks of a little stream sufficient wild plants to produce about forty pounds of the oil. In the year 1835, the industry was established in Michigan, in St. Joseph County, on White Pigeon Prairie, about two miles north of a village of that name, a distillery being erected the following year. Up to this time, and for ten years later, the distilling apparatus used was very crude, being the same as has been used England, with but slight modifications, consisting of a copper kettle in which the plants were placed, immersed in water, to which direct heat was applied by a furnace from beneath, a condensing worm of the usual character being connected with the kettle by a pipe from its apex.

The year 1846 marks a new and important era in the evolution of a more perfect system of distillation and the apparatus therefor, viz., that of distillation by the diffusion of steam through the plants, which were now, for the first time, placed in large wooden vats, to which steam was conveyed by a long pipe entering at the bottom: the kettle which had been used heretofore as the still being now used for the generation of steam. Distillation was now effected in a much more perfect manner, as the scorching of plants and the consequent formation of empyreumatic products was rendered impossible. Furthermore, distillation could now be conducted with much greater rapidity and economy. The primitive stills had a capacity of about fifteen pounds of essential oil in the twenty-four hours, the new form a capacity of seventy-five to one hundred pounds. This system of steam distillation originated in St. Joseph County, Michigan, and was soon introduced into New York.

I might state here that nearly every improvement in the construction of the stills has originated in St. Joseph

County, Mich., and it would be of great interest to mark the further development of these improvements to their present high state of perfection, but the limits of this paper render it impossible. On some other occasion I may have the honor to give some practical and technical information relating to the methods of erecting the more perfect plants of distilleries.

Briefly as to the cultivation of the plants: in early spring the ground, having been ploughed, is marked out in furrows two and a half feet apart. In these furrows are placed the roots and runners which have multiplied from the setting the preceding year. One acre of good roots usually furnishes sufficient to set from five to ten acres of new ground. These roots and runners are from one-eighth to one-fourth of an inch in diameter, and from one to three feet in length when in the healthy state. In setting, they are carried in large sacks, strung over the shoulders of the workmen, who place them in the rows so that there shall be one or two living roots or runners at every point in the row. While placing the roots with their hands, they at the same time cover them with their feet. It is quite an interesting sight, owing to the queer motions of the workmen, to see these roots planted. A good, experienced workman, in mellow ground, with good roots, can set about one acre per day. New plants appear above the ground about two weeks after setting, and are carefully hoed and cultivated until July or August, when, if the season is fair, the plants have thrown out such a quantity of runners as to render further cultivation very difficult, and indeed unnecessary.

The proper time for distillation is when the plants are in full bloom in the case of the new crop, that is, the crop which has been set the preceding spring. This usually occurs in September. What is known as the "second crop" (which has sprung up spontaneously, from being the second year's growth) matures usually in August. For distillation, the plants are cut down and allowed to dry for a while in the sun before being drawn to the distilleries. Many growers, however, believing that a loss of the oil is sustained by diffusion in the atmosphere if the plants are fairly dried, bring them to the still in the green state. As distillation can be effected with much greater rapidity from dry plants, this question of thorough drying is one in which the owners of distilleries and the producers in general have long been greatly interested. For, if the plants are worked in the green state, it will require, ordinarily, about ninety minutes for distillation, with a yield of perhaps five to seven pounds of oil to the charge, whereas, if thoroughly dried, distillation can be effected in about thirty-five minutes, with a yield of from eight to nine pounds, since the dried plants will pack much more closely in the vats than the green ones. Each owner of a distillery on the average distills the crops of ten other growers with his own, charging therefor twenty-five cents for each pound of oil obtained, whereas in England the charge is made for each vat of plants, whatever the amount of oil produced.

The former method is much more equitable for the grower, since, if his crop is poor, he is not obliged to pay an exorbitant rate per pound, and the latter method is more equitable for the distiller, since it requires as much labor to distill a charge of poor plants as green and productive ones, and, as stated, much more when the plants are green.

To test the question as to whether a loss of essential oil occurred by diffusion in the atmosphere when the plants were thoroughly dried, I made a careful experiment, the results of which may be found in the September number

* Read at the meeting of the A. P. A.

of the AMERICAN DRUGGIST; * the dried plants used having been exposed to atmospheric action for six months, and having been reduced by such exposure 49.4 per cent in weight. As there are about fifteen thousand tons of the plants produced annually in America, the settlement of this question is of material interest to owners of distilleries and growers; saving the former greatly in manufacturing and the latter in transportation.

The average yield of essential oil varies greatly, according to the quality of the plants, depending mostly on the fact whether they are fine and well covered with leaves and blossoms (in which the essential oil is entirely contained). The difference in quality of plants is so great that, while from two thousand pounds of well-leaved plants I have distilled eighteen pounds of essential oil, but one and one-half pounds have been obtained in some instances from a like quantity of coarse plants devoid of leaves. The average yield, however, is about one-third of one per cent from green plants.

There are now in America about one hundred and seventy-five small distilleries, where the natural oil is distilled. The average annual production in America for the last ten years has been about one hundred thousand pounds of oil. The average yield per acre of the crops of the first and second year is about eleven pounds; this would show an annual area under cultivation of about nine thousand acres.

As to the nature of the essential oil: regarding this there are many tests which are so generally known as not to require notice at this time. Some of them may, however, be briefly stated. Oil of peppermint, when freshly distilled, or when two or three years of age, if kept in well filled vessels, should dissolve readily in alcohol in all proportions, making a clear solution without need of filtration. When a few drops of the oil are placed upon white paper and held over a lamp or gas jet, it should volatilize quickly and perfectly without undergoing change or leaving any residue. When three drops of peppermint are placed upon four grains of resublimed iodine (or such quantity as will thoroughly saturate, but not drown the iodine) there should be but a slight reaction, and what little vapor is produced should be almost invisible, becoming entirely so after having arisen about twelve inches above the mixture, the color of the vapor assuming a bluish cast. The color of the mixture in this test should be carefully noticed, which, in the case of pure peppermint, is of a brown, or brownish-black color, the iodine dissolving slowly and imperfectly. If oil of turpentine, erigeron, fire-weed, rag-weed, or other terébinthinate oils are present, there will be quite a violent reaction (according to the quantity of the adulterant), with the evolution of considerable heat, and a red or reddish-yellow vapor will be produced, of a rank odor, partaking considerably of the nature of the adulterant, and the mixture will change to a bright violet. If the color of the mixture is most carefully noted, a very slight quantity of such adulterants can be detected. When to twenty-five drops of alcohol one drop of nitric acid sp. gr. 1.2 is added, and then one drop of pure oil of peppermint, there will be produced, within about a half hour, a blue or bluish-green color, which will remain permanent for a long time. Oil of pennyroyal and *Mentha arvensis* produce no coloration. A much more intense coloration will be produced when one drop of nitric acid, of the strength as stated, is mixed with fifty or sixty drops of the essential oil, without alcohol. Some specimens of oil of peppermint imported from Germany and England

showed by this test a mixture with *Mentha arvensis*. To make this test valuable, however, to chemists and pharmacists, they should first operate upon samples of known purity and notice the depth of coloration required.

Another test for the detection of pennyroyal, which also indicates *Mentha arvensis* when in sufficient quantity, is the following: Take one drachm each chloral hydrate and pure sulphuric acid, adding twelve drops of alcohol. When this solution is mixed with a like quantity of pure oil of peppermint, a dark cherry color is quickly produced and maintained for a long time. Pennyroyal (or oil of peppermint heavily adulterated with this oil) gives no such color, being more of a yellowish cast, and changing to an olive green. With *Mentha arvensis* a yellowish-brown color is produced which is maintained for ten or twelve hours, and thirty-six hours later has a slight tendency to assume a cherry color or one intermediate between the cherry and the brown. It was noticed that, when the true oil of peppermint was mixed in equal proportions with that of the *Mentha arvensis*, a deficiency in the intensity of the cherry color was plainly observable. Whether the significance which I have discovered in these tests, showing similar reactions in pennyroyal and *Mentha arvensis*, has a bearing on the chemical relationship of the oils of these plants which are related botanically, is a question of interest.

I will now refer to the two physical tests, those of specific gravity and boiling point, in which the results of my experience vary greatly from the tests published in official and standard works.

The difficulty which scientific men seem to have experienced in establishing accurate tests for the purity of essential oils has been, that they could not conveniently obtain the plants from which they themselves could distil the specimens used in their investigations; and while undoubtedly every possible precaution was taken, the result shows that they have in many instances operated upon impure samples; and although pure specimens undoubtedly were in some instances received, yet they had, in many cases, no positive knowledge *per se*, which were pure and which were impure, hence too great a range of differences has been allowed in physical characteristics and chemical reactions. In correspondence with some well-known chemists, they give it as their opinion that a wide range of specific gravity, etc., might result from variations in soil and climate. On account of this we took greater pains to verify our determinations by testing samples grown under much varying conditions of soil and climate, both in Europe and America. Forty-three samples were examined, including oils produced in St. Joseph, Wayne, Ionia, Hillside, and Kalkaska Counties, Michigan, Wayne County, New York, and vicinity (all of which were produced from American roots long acclimated), also one specimen grown in America from roots imported from England, and one specimen grown and distilled in England. The sp. gr. has been variously stated in the dispensatories and other standard works at from 0.840 to 0.950 at 60° F. But there were none of the samples which were pure which had a sp. gr. below 0.910 at 60° F., except the two last mentioned, grown from English roots; the one grown in America being 0.9085, the one distilled in England being 0.9088. Nor were any specimens of pure oil found having the sp. gr. above 0.917 which were in a perfectly soluble condition. One sample distilled by myself in 1875, and consequently eleven years old, had, on account of its age, a sp. gr. of 0.924; one sample from New York 0.933, and from the same district 0.940 for

another. However, those three samples were found to be readily soluble, the latter sample, when submitted to rectification, being found to contain nine per cent of insoluble resin. Of five samples imported from Europe, but one was found pure; two from Germany were found to contain dementholized *Mentha arvensis*; one from London, which bore a fraudulent and forged label (as Michigan Oil of Peppermint, manufactured at Evart, Michigan County, U. S.),* had the sp. gr. 0.899. This oil, when submitted to fractional distillation, was found to contain *fifty per cent oil turpentine and no Michigan peppermint whatever*. The sample imported from London as German oil of peppermint consisted chiefly of pennyroyal and *Mentha arvensis*. Allowing a slightly wider range of difference than was really intended, it is evident that whether from English or American plants, pure oil of peppermint is never below 0.908 sp. gr., nor, when fresh and soluble, above 0.917 sp. gr., so that the difference formerly allowable, that is, from 0.840 to 0.950, is reduced to one-tenth.

As to the boiling point; this is stated in the Dispensatories at 365° F., and 374° F. By placing the oil of peppermint in a distilling flask, the body of which was immersed in a mercury bath, and attached to the condenser, the following times and temperatures were noticed, the distilling being divided into eight fractions. Applying the heat slowly, the *slightest possible* ebullition was noticed at 363° F., but so slight as to be almost imperceptible. Ten minutes later the temperature had risen to 401.5° F., at which time *but two drachms* of fluid were collected, *one half of which was found to be water*. It will hence be observed that the true boiling point of the oil could hardly be placed below 400° F. Ten minutes later the temperature had risen to 406.9° F., with distillation progressing at the rate of but six drops per minute, and it was found, upon reducing the temperature to 406°, that the speed of distillation was reduced to one drop in forty-two seconds; so that the first fraction could not be recovered easily, except at a temperature higher than this. Counting from the time when the oil commenced to drop into the receiver, the distillation of the first fraction of one ounce occupied fifty minutes, being concluded at a temperature of 412.8° F. It would seem, then, that the *true* boiling point should not be placed below 400° F.

I would here call the attention of the Association to the need of a more definite and complete method for recording experiments in fractional distillation, in which not only the form of apparatus and method of applying the heat should be noticed, and the temperatures of each fraction, but also the speed at which it is effected in its various stages. This matter would form a very interesting matter for discussion. I will now call attention to one phenomenal characteristic observed in fractional distillation, and which I briefly alluded to one year ago, that is, the changes of direction from the ascending to the descending scale in the specific gravity of the different fractions. It had formerly been supposed that the specific gravities increased constantly after the first until the last fraction was obtained. The law discovered is that when the distillate is divided into a number of fractions, the specific gravity continued to rise only until about half the oil is recovered, they then strangely commence to descend until until 80% or 90% is obtained, and the point is reached of the specific gravity about as low as that of the third fraction. The direction now again changes to an ascending scale, increasing with great rapidity. To illustrate this, I

* Our preceding number, page 161.

* See this journal, September, page 161.

will give you the specific gravities obtained in the distillation of three hundred pounds oil of peppermint by the diffusion of steam. The times and temperatures and other conditions will be referred to in some future paper.

The specific gravities were as follows:

Number of Fraction.	Specific Gravity.	Number of Fraction.	Specific Gravity.
1.....	0.89428	8.....	0.91275
2.....	0.80650	9.....	0.91175
3.....	0.91000	10.....	0.91100
4.....	0.91275	11.....	0.91075
5.....	0.91375	12.....	0.91065
6.....	0.91400	13.....	0.91050
7.....	0.91425	14.....	0.91265

There now remains in the still one full fraction of twenty pounds not yet recovered; subdividing this fraction, the following specific gravities are found: The first five pounds is 0.925; the next two pounds 0.955, and the distillation being continued as far as possible, the last portion obtained is four ounces sp. gr. 0.970. There now remain in the still twelve pounds fourteen ounces of resin, which if mixed with seven pounds four ounces last obtained, would raise the sp. gr. of the last full fraction to about 0.980.

In calling the attention of Prof. Flückiger, of Strassburg, to the subject, he attributes it to the splitting up of the component parts. This, however, seems hardly possible when the aroma and chemical reactions of the fractions are investigated.

There are other tests and characteristics of interest which I would gladly notice if time permitted, but which will better form the subject of a future article.

Iodoform Poisoning.—Dr. E. G. Cutler, of Boston, after a very complete paper on the subject of iodoform poisoning, in the *Boston Medical and Surgical Journal*, advises:

(1) Fresh wounds or unhealthy or tuberculous surfaces are the only ones fitted for the application of iodoform.

(2) Only a thin layer or small amount of iodoform is to be applied.

(3) When granulations appear healthy, iodoform should be omitted and some other non-poisonous substance substituted.

(4) At the first symptoms of poisoning, or coincidentally with the original use of it, compounds of the alkalies and vegetable acids are to be given by the mouth at frequent intervals, as acetate of potash. If severe symptoms supervene, transfusion with common salt solution is to be resorted to, and the wound is to be washed free from iodoform with pure water and an alkaline carbonate solution, and afterward powdered magnesia is to be dusted on.

The Preparations of Ergot have been the subject of experiments by Kobert, of Dorpat, and he makes the following deductions: *Ergotinic Acid* possesses no oxytocic properties. Ergotine, in the crystalline form, has no action whatever on the uterus. *Cornutin* has a direct action on the uterus, causing contractions that are the more violent the further advanced the subject is in pregnancy. Sphacelinic acid exerts a peculiar effect on the uterus, not provoking rhythmical contractions, but a tetanus-like action. Since ergot that has been kept more than a year is absolutely inert, and yet the physician has no means of telling an old specimen from a fresh one, except by the effects, ergot should be abandoned entirely and cornutin substituted for it, for the latter really contains the active principle of *Secale cornutum*, and does not lose its power after being kept for several years.—*N. Y. Med. Jour.* after *Centr. f. Gynäk.*

AMERICAN PHARMACEUTICAL ASSOCIATION.

THE thirty-fourth convention of the American Pharmaceutical Association took place at Providence, R. I., on the 7th, 8th, and 9th of September, under the presidency of Mr. J. Roberts. In his opening address, the President, referring to resolutions recently adopted by the Maryland Pharmaceutical Association, relative to the increasing use of proprietary remedies, said:

The resolution is a step in the right direction, but possibly does not go far enough. It is by the aid and countenance of physicians that this evil can be controlled and lessened. Physicians, if properly approached, will ever be found ready to aid and foster with their best efforts all measures in the interest of pharmacy that will inure to public good. If the intent of this resolution, amplified and indorsed by this Association, and possibly supplemented by the conjoint action of the various State Pharmaceutical Associations invoked by the direct appeal of this Association, were put into proper shape and brought to the attention of physicians by direct communications officially with the many medical associations throughout our land, I believe it would go far to correct the evil. The resolution should recognize the fact that the many preparations now in popular use that may be grouped under the head of so-called "elegant pharmacy" have become such fixtures in our business that it will not do to ignore them, and embrace in its request that physicians confine their prescriptions to official remedies, and such non-secret, non-proprietary remedies as may be indorsed by, and the formula for which is published from time to time under the sanction of this Association.

The address made reference also, to modifications in the constitution and by-laws; the establishment of a reserve fund, and to the qualifications for membership. The following resolution, referred by the Council to the Association for action, was presented with the President's indorsement:

"That a committee be annually appointed, to be known as the Committee on Materia Medica or Pharmacognosy, to consist of five members, whose duty it shall be to investigate and report annually on the origin, source, and value of new remedies, such as are brought to the notice of the medical and pharmaceutical professions, the committee to represent the different sections of the country."

Finally, the President referred to the rapid multiplication of colleges of pharmacy, and said:

"That colleges of pharmacy may be multiplied without detriment to the status of pharmacy is a truism that none will deny, provided, however, that they maintain that high and ascending scale of qualifications of the students of pharmacy that all well-wishers of true pharmaceutical progress have for many years past demanded should, as a rule, be observed in their education. For, surely, as the opportunities for acquiring knowledge afforded the student of pharmacy are multiplied, so should a demand for greater proficiency be exacted from them. It is from a fear that a rapid increase of colleges of pharmacy may beget a spirit of commercial rivalry in competition for students that might lower the standard of excellence demanded of them. In my opinion it will be wise for all well-wishers of our profession to hesitate; to be well assured that there be an actual need of a new college of pharmacy in the locality in which it is proposed to establish it before lending their aid and countenance to the project."

REPORTS OF COMMITTEES.

The Special Committee on a National Formulary presented an elaborate report containing the following propositions:

1. Scope of the National Formulary.—The National Formulary, to be published under authority of the American Pharmaceutical Association, may contain the

formulas of such preparations as have either been formerly official in the U. S. Ph., and have been discarded, though still in demand; or such as have never been official, but deserve recognition, because more or less generally in use. Among the latter may be any preparations contained in foreign pharmacopoeias, if there is known to be a sufficient demand for them in any section of this country. It shall also contain the preparations belonging to so-called "elegant pharmacy," but it shall not be encumbered with purely technical, trivial, or fancy preparations.

2. System of Weights and Measures.—The National Formulary shall direct the quantities of the ingredients of such liquid preparations as are prescribed or administered by measure, in apothecaries' weight and United States measure. The same may be done in all other cases, but the system of "parts by weight" may be used where it appears to be more natural and convenient.

3. General Duties and Functions of the Committee.—A. The committee to which is assigned the duty of preparing or revising the National Formulary shall take charge of all the documents regarding the matter which may be presented to the Association. And all associations or individuals are requested to forward their contributions, as early as possible, to the committee. The committee is often compelled to decide between the merits of rival preparations, and heretofore it has been able to do this only by making the preparations itself. This method, however, has been found not to be sufficiently free from the risk of a failure to appreciate the particular meritorious feature that may be claimed for the preparations in question. It is deemed absolutely necessary that, in all doubtful cases, the proposer of a formula should furnish a sample of the preparation as made by himself. The Association therefore requests that when the committee call upon any individual, or upon any other formula committee for samples of any proposed preparations which it may need for reference and comparison, these samples be promptly furnished. And the committee shall not be held responsible for modifying or ignoring formulas of preparations, samples of which have not been furnished when so requested.

B. The committee having perfected the compilation of the National Formulary, or any subsequent committee having accomplished its revision—in case the Association shall approve the work—shall supervise and have sole charge of the printing of the text of the formulary. It is only when seeing the final text before them, with opportunity to refer at any time to formulas already passed upon and printed, that a harmonious text can be obtained. Each member of the committee should receive a proof, the corrections should be compiled by the chairman, and all matters that may be under dispute decided by a vote without delay. Hence, though a new committee may be appointed at any meeting of the Association, the previous committee shall not be considered discharged—if the whole text of the formulary is involved—until it has seen its own work through the press. And the printing of the work shall be taken in hand immediately after the annual meeting. Arrangements for the printing shall be made by the Publication Committee of the Council. Nothing contained herein, however, is intended to prevent any new committee from organizing and beginning work immediately after its appointment.

4. Publication of the National Formulary.—The National Formulary, after being finally compiled and adopted, shall be printed in the Proceedings, and also in pamphlet form, in which latter shape it shall be kept for sale. (How frequently the Formulary, as a whole, is to be revised, and whether any needed additions may for several years temporarily be deposited in the Proceedings, or otherwise, may be better determined some time after the Formulary has been in use.)

5. Publication of the Preliminary Draft of a National Formulary herewith Submitted.—The Draft of a National Formulary offered by your committee shall be printed immediately after the present annual meeting, under arrangements to be made by the publication committee of the Council, and the printing shall be supervised by the committee. In printing this Draft, econ-

omy of space is recommended to be studied, and formulas which are already easily accessible in separate pamphlets may be only quoted by title (references being given), except when remarks are to be appended. This Draft of a National Formulary shall be printed to the number of 250 copies beyond those required for the proceedings, the separate copies being placed at the disposal of the committee for distribution to outside committees and to individuals.

These propositions were adopted by the Association, together with the recommendation by the committee:

That another year be devoted to further critical examination of the formulas presented, as well as of those contained in any other collections or drafts which have not yet been considered for want of time, or which may be presented by other bodies hereafter, and that the same plan which has been followed during the preceding year should also be followed in the future, namely, that the committee having the matter in charge should be so chosen that its members are within easy reach of each other, so as to be able to hold frequent meetings. A committee scattered all over the United States may, perhaps, be perfectly successful in revising such a work as the Pharmacopœia—the draft of which is already in existence for the use of the revisers, who may distribute the work of revision among themselves. It is different, however, with a Formulary of Unofficial Preparations, which has to be, as it were, built up from the foundations with material brought together from all parts of the compass. There should be numerous helpers and agents in every State, but the working members of the committee should be within each other's reach, and able to hold frequent meetings.

The following resolution was subsequently adopted:

Resolved, That in addition to the five members from New York and Brooklyn there shall be appointed one person from each State Pharmaceutical Association, all of whom shall constitute the Committee on National Formulary, and that five members thereof shall be a quorum for the transaction of business.

The Committee on Membership reported that the number of members as per last report was 1,324; since added 35; total 1,359; loss by resignation, dropped, and death, 65; membership in good standing 1,294; honorary membership 26.

The Treasurer's Report showed balance on hand as per last report, \$4,217.79; receipts, \$5,402.64; total, \$9,682.43; expended, \$5,184.34; balance to new account, \$4,501.09; investments, \$3,765.94. The treasurer tendered his resignation.

The Committee on Legislation reported concerning the proposition to secure the publication of formulas of proprietary remedies, and recommended that information relative to the subject be printed and distributed among the legislative bodies of the various States. Resolutions to strike out the preamble and resolutions, and to lay the report on the table were defeated, and the report was ultimately accepted and adopted.

The Committee on the Drug Market stated, among other matters referred to, that

"There had been an increased demand during the year for an article that is doing incalculable injury to the fair fame of the profession of pharmacy." This refers to what the enterprising bottlers are pleased to call malt whiskey. The report states: "It is a matter of the profoundest regret and a cause of humiliation that this argument has been greatly weakened by the fact that certain concerns engaged in wholesale liquor business conceived the idea that a favorable opportunity offered to increase sales of what may or may not be articles of merit by forcing them through the respectable channels offered by the drug trade. Physicians' certificates, by the column, indorse it whether true or false, and the movement has swept through the country. Many conscientious druggists for a long time absolutely refused to yield to this demand, until driven to it by physicians prescribing the article. It would be well for this respectable body to take special cognizance of this latest outrage upon the dignity of the profession and devise by the next annual meeting some means to conquer or at least render harmless this medicinal (?) enemy. We have watched this tide, swelled by printer's ink, sweeping the country and threatening to engulf the fame of the profession, and asked what outrage may we look for next? The question is, must it go on, or will you dump this class of merchandise into the grog shops, where it belongs?"

The Committee on the President's Address submitted, among others, the following resolutions:

Resolved, That this Association solicit the aid and coöperation of the American Medical Association in promoting the prescribing by physicians of official medicines only, or of such preparations as have published formulas in preference to others, and that the several State Pharmaceutical Associations make similar requests of their respective State Medical Associations.

Resolved, That a committee of five be appointed, whose duty it shall be to inquire if there be a better plan for the management of this Association than the existing one, said committee to be appointed by the chair, and to represent the various sections of the country.

Resolved, That the committee on publication are hereby instructed to have the annual proceedings published and ready for distribution on or before January the first. And they are also instructed to omit from said publication any papers that may not be in their possession in proper time for the execution of this resolution.

Resolved, That the multiplication of colleges of pharmacy should be discouraged except where the need of them is undoubted.

The committee also recommend the abolition of the initiation fee.

The Committee appointed to memorialize Congress to appropriate money to introduce the cultivation of foreign medicinal plants report that they have decided, after consultation with the Commissioner of Agriculture, that such action will be unnecessary. That official expressed himself willing and anxious to undertake the task, and desired a list to be furnished him of seeds and plants most desirable to be used. It was voted that a committee be appointed to prepare a list of such, to be given to the Commissioner of Agriculture.

The Committee on Nominations reported the following list of officers and committees for the ensuing year:

President.—Charles A. Tufts, Dover, N. H.

Vice-Presidents.—Henry J. Menninger, Brooklyn, N. Y.; M. W. Alexander, St. Louis, Mo.; N. A. Kuhn, Omaha, Neb.

Treasurer.—S. A. D. Sheppard, Boston, Mass.

Secretary.—John M. Maisch, Philadelphia.

Reporter in Progress of Pharmacy.—C. Lewis Diehl, Louisville, Ky.

Committee on Legislation.—T. L. A. Greeve,* Cincinnati; John M. Maisch, Philadelphia; Edward Bocking, Wheeling, W. Va.

Members of Council.—George W. Kennedy, Pottsville, Pa.; A. H. Hollister, Madison, Wis.; William H. Rogers, Middletown, N. Y.; J. C. Canidus, Mobile, Ala.

Committee on Drug Market.—George J. Seabury, New York; Mahlon M. Kline, Philadelphia; E. Waldo Cutler, Boston; Daniel Myers, Cleveland; C. T. G. Meyer, St. Louis.

Committee on Papers and Queries.—Virgil Coblenz, Springfield, Ohio; Wm. W. Bartlett, Boston; E. Painter, California.

Committee on Prize Essays.—C. Lewis Diehl, Louisville; Emil Scheffer, Louisville; Rosa Upson, Marshalltown, Iowa.

* Mr. Greeve having declined, Mr. Ch. W. Day was subsequently elected.

The report was adopted, Mr. Seabury declining to serve, and Alfred H. Mason was subsequently appointed chairman of the Committee on the Drug Market.

OTHER RESOLUTIONS ADOPTED.

Postponing the report of the Committee on Reorganization until 1887.

Reducing the initiation fee from \$5 to \$2.

Adopting Cincinnati as the place for the next meeting, on the first Monday of September, 1887.

Thanking the Rhode Island Pharmaceutical Association for its efforts in behalf of a successful meeting.

Expressing sympathy for the pharmacists in Charleston, S. C., who have suffered from the recent earthquake.

Expressing the thanks of the Association to the Governor of Rhode Island and the Mayor and citizens of Providence for the cordiality of the reception given to the Association, and to the newspapers for their reports of the meeting.

Referring to the Publication Committee the propriety of printing, in advance of the meeting, all papers presented.

Reducing the salary of the Treasurer from \$750 to \$600.

Telegraphing the thanks of the A. P. A. to the San Francisco pharmacists for their invitation of the Association to meet in that city in 1887.

To receive the delegation from the National Wholesale Druggists' Association.

Admitting to the privileges of the meeting Mr. Alfred H. Mason, of Liverpool, England, Colonial Secretary of the British Pharmaceutical Congress, together with the druggists and physicians of Providence.

PAPERS ON SCIENTIFIC AND OTHER TOPICS.

"Pharmacy of Hydro-Naphthol," by THOMAS D. McEHEENIE; "Butter and Its Substitutes," by E. SCHEFFER; "Some Notes Concerning the Carbolic Acid Made in America," by E. M. HATTON; "What is the best Paste for Pasting Labels, and how can Paste be best Prepared?" by LEO ELIEL; "What should be the Relation between the Wholesale Druggists, Manufacturing Chemists, and Pharmacists as to the maintenance of proper standards of purity, quality, and strength of medicinal substances?" by J. M. GOOD; "Does Cannabis Indica Contain Nicotine?" by GEORGE W. KENNEDY; "Is it not Feasible to Prepare Concentrated Liquid Preparations from many drugs which need only be diluted with the appropriate menstruum to bring them to the official strength, without having them differ in any important point from the weaker preparations directed by United States Pharmacopœia?" by J. L. LEMBERGER, Lebanon, Pa.; "What is the Quality of the Belladonna Leaves of Commerce?" S. D. LYONS; "What is the Quality of the Balsam of Tolu of Commerce?" P. W. BEDFORD; "Dioscorea Bulbifera," J. U. and J. G. LLOYD; "Evaporation of Percolates," J. U. LLOYD; "Guarana—Methods for its Assay and the Assay of its Fluid Extract," H. W. SNOW, Detroit; "An Analysis of the Underground Portion of Phlox Carolina," H. TRIMBLE, Philadelphia; "Ginger in Soluble Essence," LUTHER F. STEVENS; "Abstracts" (continued), VIRGIL COBLENTZ, Chicago; "Glycerin and its Uses," GEORGE C. CLOSE; "Notes on some of the Quinias," H. F. CUMMINGS; "On the Best Methods of Determining Melting Points," HENRY C. C. MAISCH, Philadelphia; "On the Oil of Peppermint," A. M. TODD; "Decase of the West Virginia Pharmaceutical Association," EDMUND BOCKING; "A Study of Peptonization and Pepsin," DR.

R. G. ECCLES; "Nitrous Ether," EMLÉN PAINTER.

NEW MEMBERS.

Fred. W. Fink, New York; Henry A. Sasterbrook, Fillburg, Mass.; August Gresham, Newark, N. J.; Albert S. Dolloff, Lake Village, N. H.; Gus Dresser, Putnam, Conn.; C. J. McCarthy, Shenandoah, Pa.; Arthur B. Houson, Chillicothe, O.; D. F. Downing, Newport, R. I.; C. T. Fennell, Cincinnati, O.; Clark Z. Otis, Binghamton, N. Y.; C. V. Stryker, Philadelphia, Pa.; Benj. F. Gnadenbush, New York City; A. Thurston, Grand Rapids, Mich.; W. E. Warer, Keyport, N. J.; J. Leroy Leyberg, Detroit, Mich.; Willis G. Gregory, Buffalo, N. Y.; Ed. D. Wright, New Bedford, D. Frank Hayes, New York; Henry Schmidt, Joseph Miller, Plainfield, N. J.; Fred. B. Kilmer, New Brunswick, N. J.; Amos H. Coffee, Carthage, Mo.; Goodwin R. Wiley, of Bethel, Me.

N. B. D. A.

THE National Retail Druggists' Association assembled at Providence, R. I., on the 6th of September, and dissolved the organization. On the following day, the Association was re-organized on a new basis, providing for a membership consisting of delegates from State pharmaceutical associations with more than twenty-five members, in the proportion of one delegate for every hundred members or fraction of that number. From States where no State organization exists, delegates may be sent, upon the same basis, by local organizations.

The finances of the old organization consisted of \$132.32 of cash on hand, with an indebtedness of \$300 for salaries in 1884. The officers to whom salaries were due having waived their claims, the balance on hand was directed to be given to the former Treasurer.

The following officers were elected: *President*.—A. Hollister, of Wisconsin.

Vice-Presidents.—M. W. Alexander, of Missouri; P. C. Candidus, of Alabama.

Secretary.—L. E. Nicot, of New York.

Treasurer.—F. H. Masi, of Virginia.

Committee for Conference with the American Pharmaceutical Association.—E. A. Sayre, L. E. Nicot, Rosa Upson, A. H. Hollister, and T. R. Baker.

Executive Committee.—H. Cumming, of Massachusetts; T. J. Macmahan, of New York; R. Vandervoort, of New Jersey, and H. I. Leith, of Rhode Island.

Committee on the Exhibition.—Messrs. Van Sant, Macmahan, and Kuhn.

Resolutions of thanks were adopted to the exhibitors and to the Local Committee, and particularly to Mr. H. I. Leith, the Local Secretary.

The next meeting will be held at the call of the President.

Poisoning by Permanganate of Potassium.—Dr. W. D. Bidwell, of Leavenworth, Kan., sends to the *Boston Medical and Surgical Journal* an account of his experience in the use of the permanganate of potassium in amenorrhoea. In several cases in which the medicine was given in two-grain capsules thrice daily, it caused burning pain in the stomach, and generally symptoms of shock or collapse, which sometimes persisted two or three days. In some of the cases, it also produced nausea and vomiting.

Olive Oil is adulterated in France to such an extent with cotton-seed oil that it has seriously affected the production of the former.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,773.—**Prescription Difficulty:** Morphine and Compound Tincture of Lavender (W. F. B.).

We have answered this query in our last number (September, page 179, Query 1,768).

No. 1,774.—**Tints for Face Powders** (F. P. Y.).

A fine flesh color is imparted to face powders by intimately mixing with them the proper quantity of *carmine* or of *eosine*. The former is best triturated with talc, in the proportion of 1 part of carmine to 3 of talc, and a sufficient quantity of the mixture incorporated with the face powder to produce the requisite tint. It depends upon the nature of the constituents, how much of the mixture would be required. This is, however, so easy to ascertain by a simple trial, in each case, that you will have no difficulty in fixing the proportion.

If eosine is used, it should be dissolved in water, say, 1 part in 20, and a sufficient quantity of this added to powdered talc to impart to the latter a deep tint. This tinted talc can then be used for mixing with the face powder. Or, the proper amount of eosine solution, more or less diluted, may be added to the face powder direct.

The flesh tint of both the carmine and eosine may be rendered more natural by combining it with a certain proportion of aniline orange. What the proportion should be depends on the quality of the colors and the individual judgment.

By proportionately increasing the orange, a brunette color may be produced, which, when properly diluted (with a white powder, such as talc), has a creamy tint.

The previous communication you refer to did not reach us.

No. 1,775.—**Bleaching Wax** (W. K., Parras, Mexico).

The best method of bleaching beeswax is that by exposure to moisture and the rays of the sun. To expedite the process, it is necessary that the wax be in very thin slices, which is accomplished in various ways. One of these is as follows: Beeswax is melted in a suitable kettle. Alongside of this is a box made of tinned iron, which has a number of narrow slits in its bottom. Immediately below is a wooden cylinder on an axle resting in bearings, half of the cylinder being immersed in cold water. One of the workmen pours the melted wax, by means of a ladle, into the box, whence it issues in a thin stream through the slits, and flows upon the wooden cylinder which is turned by another workman. It thus winds itself upon the cylinder in very thin sheets, which fall into the water in more or less large pieces. Or melted wax is projected from a revolving kettle, provided with one or more faucets, in a fine stream or almost spray, which is caught by very cold water. The division of the wax by this method is so great that the bleaching process takes only about one-third the time of that required for band-wax.

The prepared wax, whether in sheets, bands, or grains, is transferred to muslin stretched upon wooden frames, and then exposed to the sun. It is moistened at least once daily with water, and must be repeatedly turned over so as to expose a new surface to the sun. It depends upon the amount

of sunlight, temperature, and care bestowed upon it, how long a period is required for the bleaching. When it has become perfectly white, the wax is melted in hot water, strained, and then poured into forms.

Band-wax is liable to be bleached only to a certain depth, while the interior remains yellow. It must, therefore, usually be remelted, again formed into bands, and again bleached until it is perfectly white, which sometimes requires as much as five weeks, and involves a loss of from 2 to 10 per cent of the wax.

Grain wax is much more easy to bleach. It is, however, necessary to make experiments on a small scale, whether any given kind of wax is capable of being bleached at all, which is not always the case.

The bleaching process is, of course, accomplished by the agency of ozone, which is present when moisture and sunlight act upon the wax. The knowledge of this fact has suggested the employment of certain substances which are themselves strong ozone generators, and the time required for bleaching has, indeed, been diminished thereby to a period of only six to eight days, while formerly from three to five weeks were necessary. The improved process consists in melting together, at a gentle heat, eight parts of yellow beeswax and one to one and one-half parts of rectified oil of turpentine, free from resin, and treating this mixture in the same manner as has been described above. The bleaching will be accomplished in six to eight days, and the wax will have lost all trace of the odor of turpentine.

Ribbon or grain wax may also be bleached very quickly and effectively by means of peroxide of hydrogen, which does not affect its chemical constitution. But chlorine gas, chloride of lime, permanganate of potassium and other powerful chemicals cannot be used for this purpose, as they alter the constitution of the wax.

No. 1,776.—**Morphine Habit** (J. A. H.).

This correspondent asks: "What remedy or what drug is usually used to break off the habit?"

To this query we can give no direct answer, as there is no remedy or drug which, by itself, can accomplish the cessation of the morbid craving for the baneful narcotic. The only effective cure—and it is often merely temporary—is a restoration of the will-power and self-control, to be brought about by a careful and judicious treatment, and a restraint from habits of dissipation or idleness.

The so-called "Antidotes for Morphine," or "Remedies for the Opium or Morphine Habit," are merely traps for catching the money of the unfortunate victims, and, if any should succeed in allaying the craving for opium or morphine, they have become so necessary as substitutes that the cure is often worse than the disease.

No. 1,777.—**Formularies** (M. L. P.). This correspondent wants to know what are the best formularies "for the guidance of pharmacists in making the various preparations?"

As our correspondent is a physician, we presume we need not tell him that the pharmacopoeia is the legitimate guide for all preparations contained therein. As to unofficial preparations, there is a prospect that a National Formulary of Unofficial Preparations will be completed during next year, on or before about September, 1887, which will be published by the American Pharm. Association. For the present, there are a number of formularies in use, some of them embracing rather the so-called "elegant preparations," while others are of more general character. The New York and

Brooklyn Formulary has undoubtedly had the largest circulation of any local work. Other local formularies, which have been prepared for similar purposes, are those published by the Kentucky and the Pennsylvania Pharm. Associations. Another was published by a joint committee of physicians and pharmacists in Washington, and still others elsewhere. There is not one which does not contain preparations omitted in one or more of the others. Besides, there are the formularies published by individual authors, a list of which you may obtain from some book-dealers, for instance, J. H. Vail & Co., 21 Astor Place, New York. These works contain many preparations of similar or identical titles, which differ greatly in their composition, and one and the same preparation is often directed to be made in a different manner, or of a different strength, or from different ingredients by the various authors. As long as there is no national standard, it would be impossible for us to say which authority you should follow.

No. 1,778.—Easton's Syrup (C. E. H.).

A formula for Easton's Syrup (not Eaton's, as several authors have it) was introduced into the last U. S. Pharmacopœia, under the title *Syrupus Ferri, Quininae et Strychninae Phosphatum*. When prepared by the official process, the syrup keeps better than when made after the old method, by dissolving the bluish phosphate of iron in phosphoric acid. Nevertheless, a slight precipitate will generally form after some time, and we have not seen any Easton's Syrup which would not deposit some little sediment after having been made. When the deposition has been completed and the clear syrup is removed, no further change occurs, if it is kept well. The deposited matter is mainly a basic phosphate of iron.

The original formula for Easton's Syrup was published (according to Mr. Martindale) in Aitken's "Practice of Medicine," vol. II., p. 62, 5th ed. From the fact that Aitken published it, it has also received the name: *Aitken's Syrup*. According to Mr. Martindale, it may be more conveniently prepared, and keeps better, if made as follows, (British weights and measures):

Strychnine.....	8 grains.
Phosphoric Acid, syrupy, sp. gr. 1.500.....	2 drachms.
Quinine, pure anhydrous....	192 grains.
Sugar.....	5 oz.
Distilled Water, enough to make.....	6 fl. oz.

Dissolve the strychnine in 3 fl. oz. of water, previously mixed with the phosphoric acid; then add the quinine, heat until it is dissolved, filter while hot, and add the sugar. Dissolve with the aid of heat, strain, and make up with water to 6 fl. oz.

Instead of the quinine, 224 grains of phosphate of quinine may be used, in which case only 1 fl. drachm of phosphoric acid is requisite.

This is a concentrated preparation and must be carefully labelled and kept, to prevent mistakes. Label it: *Concentrated Solution for making Easton's Syrup*.

Mr. Martindale found that if the solution of the alkaloids is kept apart from the phosphate of iron, there is much less tendency to precipitate. The darkening of the syrup is also prevented, which Mr. Martindale ascribes to some reaction between the solution of phosphate of iron and the phosphate of quinine, independently of the presence of sugar.

The other portion of the syrup is prepared in the following manner, according to Mr. Martindale's improvement upon the formula in the British Pharm.:

Syrupus Ferri Phosphatis.

Iron Wire, bright.....	360 grains.
Phosphoric Acid, syrupy, spec. gr. 1.500.....	7 fl. oz.
Syrup (cold).....	72 "
Distilled Water, enough to make.....	96 "

Place the iron wire, phosphoric acid, and 8 fl. oz. of the water into a glass flask, taking care that the iron wire is completely covered by the liquid, plug the neck with cotton wool, and set it aside for 2 or 3 days to dissolve. Then filter, add the syrup, and lastly, enough water to make 96 fl. oz.

When *Easton's* (or *Aitken's*) Syrup is called for, prepare it by mixing

Concentrated Solution for making Easton's Syrup.....	1½ fl. oz.
Syrup of Phosphate of Iron.....	64 "

Each fluidrachm of this contains 1 grain of phosphate of iron, about 1 grain of phosphate of quinine, and ¼ grain of strychnine.

No. 1,779.—Deodorizing Gelatin (M. J. E., California).

We do not think it practicable to deprive commercial gelatin of any disagreeable odor which it may possess, on a small scale. This ought to be done in the course of manufacture. There is no difficulty in obtaining gelatin free from odor, if you will purchase the qualities used for culinary pur-



AWFUL EXAMPLE.—Yes, gentlemen, I am a reformed man!
LADY.—Good heavens! what must he have looked like before he reformed?

poses. If a coarser kind of gelatin is to be used, we think it more convenient to cover any fetid odor it may possess by the cautious addition of some pleasant volatile oil, or other aromatic substance, added in just sufficient quantity to disguise the objectionable smell.

No. 1,780.—Syrupus Codeinae (M. J. E., California).

Syrup of Codeine is officinal in the French Pharmacopœia. The mode of preparation is as follows:

Codeine in powder.....	0.20	gr. 8
Alcohol of 60%.....	5.00	℥ 90
Syrup.....	95.00	fl. 3 2½

Using the officinal alcohol of the U. S. Ph., and calculating the amounts necessary for 1 pint, the following would be the formula:

Codeine, in powder.....	gr. 18
Alcohol, U. S.....	6 fl. drachms
Water.....	3 fl. drachms
Syrup, enough to make.....	16 fl. oz.

Dissolve the codeine in the alcohol and water previously mixed. Then add enough syrup to make 1 pint. Each fluidrachm contains about ¼ grain of codeine. It might be advisable, if a formula for this syrup

were to be established for use in this country, to alter the strength so that each fluidrachm shall contain ½ grain of codeine. In this case, it would require 16 grains of the alkaloid, instead of 18 grains, for each pint.

Formulæ asked for.

1. *Butt's Imperial Ointment*.
2. *B. S. Collins' Antidote for Morphine*. Our correspondent wants to know what it is composed of. "The maker charges from \$7.50 to \$20 per bottle."

CORRESPONDENCE

American Druggist.

GENTLEMEN:—In the June number *Queries and Answers*, No. 1,715, "Removing the Marks of Tattooing with India Ink (J. W. E.)," I showed an old man, whose arm was tattooed in several places, the question. This old man says: Take the milk from a woman's breast and use it the same as the India Ink is used in making the mark of tattoo. Use the same kind of needle used in tattooing, putting on and wiping off, and, by persevering, it will all be taken out.

You can send this to J. W. E., and, if he so desires, he can give it a trial. I think I would have to be in earnest before I would try his or what he has tried.

Respectfully,
N. G. DUNLAP.

ITEMS.

Pelletierine has been found by Dr. Galezowski, of Paris, to be a remedy for paralysis of branches of the third and sixth cranial nerves; improvement or cure having followed, in several instances, after three to six doses.

Urethan has been used by Dr. Abbot, of Boston, as a hypnotic in chorea with the most satisfactory results.

Populin—derived from the bark of the white Poplar—is said to relieve painful urination in doses of 2 to 4 grains.

Bismuth subnitrate, made into paste with water and applied to a swelled testicle, is said (*Med. and Surg. Rep.*) to remove pain at once, and the swelling presently.

Tobacco moistened with the juice of the water-cress, is said to prevent nicotine poisoning (?) without destroying the flavor of the smoke.

Sulphocyanide of Sodium has, according to Paschkis (*Schmidt's Jahrb.*), an action somewhat similar to strychnine, though less rapid.

Tincture of Opium of the British Pharmacopœia contains about 0.75% of morphine as compared with the same preparation after the U. S. P., which averages 1.4%.

Amyl Nitrite is recommended as the proper antidote for cocaine.

Linseed Oil as a Remedy for Itching.—A correspondent of the *Boston Medical and Surgical Journal* recommends the inunction of linseed oil as the best of all remedies for arresting the distressing itching of the anus with which so many persons are afflicted.

Subnitrate of Bismuth (according to *The Lancet*) has recently been given, with good effect, to cholera patients by a Spanish physician, in doses of 150 grains every half-hour.

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Whole No. 149.

[ORIGINAL COMMUNICATION.]

MICROSCOPIC VIEWS OF SOME COD-LIVER OIL EMULSIONS.*

SINCE the publication of the New York and Brooklyn Formulary, in which a concentrated or stock-emulsion was proposed from which plain or compound emulsions may be made by proper dilution, more than usual attention has been given to the study of this kind of preparations, and various modifications have been devised or recalled to memory which are supposed to yield particularly good results. Mr. Henry Schmid, a member of the committee, while experimenting with some of these formulæ, was fortunate enough in obtaining the aid of one of his medical friends, Dr.

prepared after the following formula:

Cod-Liver Oil.....	8 fl. oz.
Extract of Malt.	8 "
Pancreatin.....	256 gr.
Oil of Gaultheria	32 ℥
Oil of Cinnamon.....	16 ℥
Alcohol	4 fl. dr.
Syrup of Hypophosphites (U. S.), enough to make.....	32 fl. oz.

Beat the Extract of Malt in a mortar until it can be drawn into strings, add

will be seen that it appears more perfect than any.

No. 2. Emulsion of Cod-Liver Oil.

Scale $\frac{1}{16}$ of an inch.

This emulsion was prepared after the formula given by Mr. Wm. P. DeForest, of Brooklyn.

Cod-liver Oil.....	15 fl. oz.
Acacia, in fine powder...	8 tr. oz.
Sugar, in fine powder...	6 tr. oz.
Oil of Gaultheria. ....	.90 ℥
Water enough to make..	30 fl. oz.

Place the Acacia, Sugar, Oil of Gaultheria, and Cod-Liver Oil into a large mortar, then add at once 8 fl. oz. of water. By means of a vaginal syringe mix the whole thoroughly until it is completely emulsified. Then add, at once, enough water to make 30 fl. oz.

Considerable



No. 1.—Pancreatic Emulsion of Cod-liver Oil (Proprietary).



No. 2.—Plain Emulsion of Cod-liver Oil (after DeForest).



No. 3.—Emulsion of Cod-liver Oil with Hypophosphite of Lime and Soda (Proprietary).



No. 4.—Plain Emulsion of Cod-liver Oil (Proprietary.)



No. 5.—Emulsion of Cod-liver Oil with Hypophosphite of Lime and Soda (after DeForest).



No. 6.—Plain Emulsion of Cod-liver Oil (N. Y. & B. Formulary).



No. 7.—Plain Emulsion of Cod-liver Oil (Proposed improvement of formula in N. Y. & B. Formulary).



No. 8.—Pancreatic Emulsion of Cod-liver Oil (Proprietary).

Francis A. Brodsky, who prepared microphotographic views of a number of them, which are here reproduced. It was not intended to make an exhaustive comparison of all the commercial emulsions of cod-liver oil, or even of the products obtained by the various published formulæ. Only those were photographed which the object of the investigation required to be taken in hand.

No. 1. Pancreatic Emulsion of Cod-Liver Oil.

Scale $\frac{1}{16}$ of an inch.

This is a proprietary emulsion, in considerable demand, and is said to be

* Chiefly from materials supplied by Mr. Henry Schmid and Dr. Francis A. Brodsky, of New York

the Pancreatin, and mix thoroughly. Then add the Cod-Liver Oil in small quantities at a time and beat until a smooth mass results. Add the Alcohol and essential Oils, and gradually incorporate the Syrup by trituration.

Much difficulty was encountered in getting sharp definitions of the oil globules under the lens, for photographic purposes. This was particularly difficult in the present case. The minute oil globules being imbedded in a mixture consisting partly of extract of malt, prevented a distinct focus or the attainment of sharply defined outlines. Osmium vapor had to be resorted to, to darken the oil globules.

On comparing the microscopic view of this emulsion with the others, it

care and labor was bestowed upon the proper manipulation of this emulsion. Nevertheless, as will be noticed from the cut, some large oil globules are still visible in the field.

No. 3. Emulsion of Cod-Liver Oil with Compound Syrup of Hypophosphite of Lime and Soda.

Scale $\frac{1}{16}$ of an inch.

This emulsion is put on the market by a Philadelphia house, but the formula is not known.

The oil is evidently not properly subdivided, there being numerous more or less large oil globules scattered through the field.

No. 4. *Emulsion of Cod-Liver Oil.*Scale $\frac{1}{16}$ of an inch.

This is another popular emulsion, made by a Philadelphia house. The formula is unknown. It is claimed to contain 50 per cent of cod-liver oil.

It is evidently a very imperfect emulsion, the oil globules being quite large and prominent.

No. 5. *Emulsion of Cod-Liver Oil with Hypophosphite of Lime and Soda.*Scale $\frac{1}{16}$ of an inch.

This is prepared by the same process as No. 2, with the addition of two drachms, each, of the hypophosphites of calcium and sodium to the first portion.

In this case the result is about the same as in the simple emulsion.

No. 6. *Emulsion of Cod-Liver Oil.*Scale $\frac{1}{16}$ of an inch.

This is prepared after the formula published in the New York and Brooklyn Formulary. (Compare No. 7.)

Acacia, in fine powder... 2 av. oz.
Sugar, in fine powder... 4 " "
Cod-liver oil 16 fl. oz.
Oil of Sassafras..... 30 m
Oil of Wintergreen..... 30 m
Water enough to make... 32 fl. oz.

Mix the Acacia and Sugar with the Cod-Liver Oil in a dry mortar, and add 8 fluidounces of Water. Then triturate thoroughly and continuously, until the oil is emulsified, and finally incorporate enough Water to make the product measure two pints.

The photograph shows that the emulsion, though made carefully by this process, is apt to be imperfect, the oil having a strong tendency to run together.

No. 7. *Emulsion of Cod-Liver Oil.*Scale $\frac{1}{16}$ of an inch.

This is made after a formula, proposed by Mr. Theodore Louis, of New York, as an improvement on that of the New York and Brooklyn Formulary. (Compare No. 6.)

Acacia, in fine powder.. 8 av. oz.
Sugar, in fine powder... 2 "
Glycerin..... 2 fl. oz.
Cod-Liver Oil..... 16 "
Oil of Sassafras..... 30 m
Oil of Wintergreen..... 30 m
Water, enough to make... 32 fl. oz.

Mix the Acacia with $4\frac{1}{2}$ fl. oz. of Water in a capacious dry mortar until a smooth paste is formed, and incorporate with this, gradually and under constant trituration, 6 fl. oz. of the Cod-Liver Oil, until the latter is perfectly emulsified. Mix with this the 2 oz. of Sugar and then add, gradually and under constant trituration, alternate portions of the remaining 10 fl. oz. of Cod-Liver Oil, and a mixture of the 2 fl. oz. of Glycerin with 3 fl. oz. of Water, in quantities of about 2 fl. oz. or 1 fl. oz. at a time. Lastly, add the essential oil, and enough water to make 32 fl. oz.

The photograph shows that even this is not a perfect emulsion, though it is an improvement on the preceding. As will be noticed there are large bullæ of oil scattered through the field.

No. 8. *Pancreatic Emulsion of Cod-Liver Oil.*Scale $\frac{1}{16}$ of an inch.

This is likewise a proprietary emulsion. The reputed formula is as follows:

Cod-Liver Oil 80 minims.
Pancreatin, soluble... 5 grains.
Soda..... $\frac{1}{2}$ grain.
Boric Acid..... $\frac{1}{4}$ "
Hyocholic Acid..... $\frac{1}{4}$ "
Distilled Water..... 85 minims.

In this case, the confluency of the oil is also well marked.

Note of Ed. Am. Drugg.—The preceding views demonstrate the fact that there is still room for considerable improvement in the preparation of emulsions. After all, the old-fashioned method, in which the proportions are: Oil 4, Gum 2, Water 3, appears to furnish the most reliable results. But the object of most of the proposed modifications has been to shorten the time and labor requisite for attaining the desired end, particularly when larger quantities of emulsion are to be prepared. It remains to be seen whether some of these modified processes will not succeed better if a more thorough mechanical combination can be brought about.

There is, however, something to be said in favor of several of the emulsions figured above, though they may not show so well under the microscope. After all, the best practical test of an emulsion is its keeping quality, and its readiness to be restored to an apparently stable condition by shaking. In this respect the two formulæ proposed by Mr. De Forest and Mr. Louis are quite satisfactory.

LOCK-COVERED OINTMENT BOXES.

AN English firm have lately introduced a contrivance for securing the tops of pots used for ointments,



tooth-powders, and similar articles, which can be adapted to glass or porcelain, and which possesses decided advantages. The engraving renders a description unnecessary.

Saccharin.

SACCHARIN, the new coal-tar derivative which is sweeter than sugar, and is yet neither a food nor a poison to man, so that it may be used by diabetics for sweetening dishes, is, in its chemical constitution, an acid; it is anhydrous orthosulphaminobenzoic acid. As it has so ponderous a name by nature, the discoverer and manufacturers, who by the way are very dilatory in putting the new drug on to the market, did wisely to give it a short and simple trade name. It is well, however, to remember that the substance has an acid constitution; for, as Dr. L. Wolff has pointed out in a paper read at the Philadelphia County Medical Society, it can be used to combine with alkaloids; with quinine, for instance, it forms a sulphaminbenzoate of quinine, the bitter taste of the alkaloid being almost completely masked.

Keeping Drugs in Drawers.—For the preservation of drugs stored in drawers, they should be first inclosed in boxes and then placed in a drawer provided with a perforated false bottom, under which quicklime or dried oatmeal is spread and occasionally renewed.—*Brit. and Col. Druggist.*

[ORIGINAL COMMUNICATION.]

FLUID EXTRACT OF SQUILL.

BY J. U. LLOYD.

THIS is one of the new fluid extracts of the Pharmacopœia of 1880, and the formula is evidently devised to meet the requirements of a trade demand. That such a preparation is necessary from this view alone, I think all will admit who aim to supply such preparations as are asked for by dealers in drugs, and even physicians prescribe it. Accepting, therefore, that an endeavor to furnish a formula which will render the preparation uniform prompted the committee to introduce it, and not arguing for or against the judiciousness of their course, I will consider a few of the points that have suggested themselves during an experience that has long antedated the pharmacopœial process, and that extends perhaps even from the time when fluid extract of squill was scarcely called for in general commerce.

The powdering of *prime squill* is almost an impossibility with pharmacists, and I expect that few persons will take issue with this statement. *Prime squill* is tough and moist; it cannot be pulverized. The pharmacist, as a rule, has no convenience for drying it, and if he should be so successful as to dry it, a hard horny substance remains that cannot be powdered by ordinary methods. Hence it is that the first step in following the U. S. P. process is really out of reach of most pharmacists. If we examine the pulverized squill of commerce, we often find it to possess an odor reminding us of burnt crackers or burnt flour. If the powdered squill is nice and white, the price is too often so excessive that we can better afford to use the fluid extract of squill of the firm that powdered it. Admitting that it is reasonable in price, excellent in quality, and that it has not solidified in the container, we reach the next step in the process.

Squill in No. 20 powder is required by the pharmacopœia; alcohol of specific gravity 0.820. This strength of alcohol was evidently selected to avoid the gumming that would follow the use of diluted, although it is not demonstrated, I think, that strong alcohol will dissolve the active principles of squill. In other words, it is a convenient menstruum. Admitting, however, that the medicinal principles of squill are soluble in alcohol (the *bitter* of squill certainly is), it does not follow that alcohol will exhaust these substances from squill in No. 20 powder. It is found that such a powder resembles a mass of sand, and that the alcohol used in percolation passes *around* the small pieces instead of *through* them. It has no power to dissolve the horn-like mucilage that makes the mass of squill, but, on the contrary, contracts and hardens the pieces. Therefore, as it can scarcely penetrate the fragments (for No. 20 powder is scarcely more than broken), it is obvious that a large share of the peculiar squill products are still enveloped in their horny bed after the process of percolation. It is my opinion that if strong alcohol is employed in making this fluid extract, the squill should be in the form of a *very fine powder*.

Will strong alcohol exhaust squill?—In the year 1875, I percolated fifty pounds of fine ground squill in a cylindrical percolator, passing two hundred pints of alcohol through it. The final percolate was colorless and tasteless. Then the material within the percolator was removed, moistened with water, and, after it had been softened, was placed in a still, covered with alcohol, and heat applied. The distillate was returned to the still as it condensed. After one hour, the heat was suspended

ed, and when cool enough, the magma was removed from the still and squeezed. To all sensible tests this liquid was as characteristic of squill as the original percolate, after both had been brought to the same bulk. The man who scooped the warm magma from the still suffered from a severe irritation of the skin of the exposed portion of his arm, that nearly produced blisters. That in this instance the acrid principles were not extracted by percolation with alcohol is evident, and from the result of other investigations I am led to doubt if alcohol is a menstruum to be commended.

Diluted Acetic Acid as a Menstruum.

—Comparing the advantages and disadvantages of many formulas and propositions as to manipulation and product, I am most favorably inclined to diluted acetic acid and maceration as the best method to exhaust the squill. It seems to make little difference whether the squill is powdered or crude. The result convinces me that the exhaustion is as perfect with sliced squill as with powdered. The sliced squill has the advantage of looseness, and permits the free circulation of the liquid during the act of maceration without forming a musty magma, and the liquid is finally extracted by means of a combination screw and knuckle joint.

In comparing an alcoholic tincture or fluid extract of squill with a preparation made as I suggest, which is in reality vinegar of squill, it will be observed that in the alcoholic preparation the bitter principle preponderates, while in the acetic acid process the acrid principles seem to be characteristic. Indeed, vinegar of squill is not at all bitter, and this leads me to a consideration of the respective claims of

Alcohol and Diluted Acetic Acid as solvents for the active principles of squill.

Doubtless all that is known of the constituents of this familiar drug will be found recorded in the Dispensatories and Pharmacographia. At least I have not been able to refer to any original work that has been overlooked by their authors. It is shown, and evidently acknowledged, that but little is known of the active principles of squill. Although a number of substances have been identified or indicated, none have been shown to be the active body. It seems probable that the principle that gives to squill its diuretic and expectorant properties is not the bitter substance to which the names *scillitin* and *skulein* have been given, and which is very soluble in alcohol, but which is evidently not dissolved by diluted acetic acid. Passing to the physiological investigations of Moeller and Jarmsted, we find that other substances, named *scillitoxin* and *scillin*, have properties analogous to digitalis, but altogether there is but little scientific evidence, I think, to demonstrate that either chemically or physiologically the peculiar proximate constituents of squill are actually known in separate condition. That this is accepted by leading medical authorities is shown by Prof. Roberts Bartholow's account of squill in his "Materia Medica," and the uses as given in the dispensatories. It will be found also that, as a rule, the medical profession prefers to use vinegar of squill or syrup of squill (which is made from the vinegar). We have but little, if any, evidence to support the claims of alcohol as an extracting agent. The usual preparation of the various pharmacopœias is a vinegar or syrup, and the position which squill occupies in therapeutics has been attained by the use of a non-alcoholic menstruum, either the vinegar or syrup. Therefore I argue that, exclusive of the objections to alcohol from the stand of the pharmacist (as previously stated),

there is little to support it as a menstruum to make fluid extract of squill. It is evident that, if we consider the menstruum that has given the preparations of squill a therapeutical standing, we should use diluted acetic acid in exhausting squill. In doing so, in my opinion, we escape another objection—the bitterness of the fluid extract, as made with alcohol. I therefore believe that not only have we made a mistake in our official process, from a working standpoint, but also from a therapeutical point of view; for it is evident that the fluid extract of squill is designed to replace, in a concentrated form, the well-known vinegar and syrup of squill. It is painfully evident also that in many cases it is desired (or designed) to make vinegar and syrup of squill by dilution of the fluid extract.

Can Diluted Acetic Acid be Used to Make the Fluid Extract? In giving my views upon this subject, I will state that after a large number of experiments with menstrooms of all descriptions, in large and small amounts, I favor the simple maceration of sliced squill in dilute acetic acid, extraction by pressure, and then evaporation by appropriate means to the bulk of *two fluidounces for each troy ounce* of squill used (or 2 C.c. for each gramme). To this syrupy liquid one-half its bulk of alcohol is added, and, after some days, the product is to be filtered. This produces a preparation having a syrupy consistence, an acid, slightly acrid (not bitter) taste, and a color that ranges from light amber to dark brown-red, in accordance with certain features of the evaporation that I shall consider in another paper of more general application.

Such a fluid extract will practically represent one-half of its bulk of squill, if the menstruum is, as I believe, the proper one, and if the heat has not destroyed the valuable constituents. In my opinion, there is little injury by the evaporation in such amounts as pharmacists are likely to prepare. In large quantities, special arrangements must be made for evaporation, in which connection I again call attention to a paper that bears upon this special subject.*

A STUDY OF THE U. S. PHARM. METHOD OF ASSAYING OPIUM.†

BY T. J. WRAMPMEIER AND G. MEINERT.

THE U. S. Pharmacopœia gives the following process for the assay of opium, viz.: 7 Gm. of the drug are triturated with 3 Gm. of freshly slaked lime and 70 C.c. of water in a mortar. The mixture is then placed upon a filter, and 50 C.c. of filtrate taken to represent 5 Gm. of opium. To the 50 C.c. of filtrate are added 5 C.c. of alcohol, 25 C.c. of ether, and 3 Gm. of ammonium chloride, and the solution allowed to stand for twelve hours. The precipitated morphine is then filtered out, using counterpoised filter papers, dried at a temperature of 55°–60° C. and weighed. By multiplying the weight by 20, the per cent is obtained.

This method of assaying opium was first suggested by two French chemists, Portes and Langlois (1881: *Jour. de Pharm. et de Chim.*, NEW REM., 1882, 64). These chemists assumed that 53 C.c. of the filtrate must be taken to represent 5 Gm. of opium, whereas the U. S. P. process directs that 50 C.c. of the filtrate be taken as equivalent to 5 Gm. of opium. Mr. Convey, in a paper read before the Br. Ph. Ass.

(1884: *Pharm. Jour. Trans.* [3], 15, 473), claimed to have found by experiment (though he does not describe his experiment) that 52 C.c. must be taken to represent 5 Gm. of the drug, saying that these 2 C.c. must be allowed for increase of bulk due to the extractive matter dissolved by the water, and that, by taking 50 C.c. as the U. S. P. directs, a serious mistake was made.

In order to decide this point, namely, whether 50 C.c. or 52 C.c. of filtrate should be taken, it was necessary to ascertain whether the total liquid, that is the 70 C.c. of water plus the extractive matter dissolved thereby, was really more than 70 C.c.; for, if 52 C.c. have to be taken to represent 5 Gm. of the drug, the total liquid must be 72.8 C.c.

To this end the following experiments were made: 7 Gm. of powdered opium were taken, dried at 100° C. and transferred to a flask. A flask was used instead of mortar, in order to avoid loss by evaporation. 3 Gm. of freshly slaked lime and 70 C.c. of water were added, the whole thoroughly mixed and allowed to stand for half an hour. The mixture was then placed upon a filter and (instead of 50 C.c.) the liquid was drained off as much as possible by means of an aspirator. The filtrate was weighed, and its spec. gr. taken. In order to determine how much liquid there was left in the opium on the filter, the filter was weighed with the funnel, dried at 100° C. to constant weight, and again weighed. By multiplying the loss in weight by the spec. gr. of the filtrate, the weight of the liquid left in the opium was found. In the same manner, the weight of the liquid left in the macerating flask which could not be brought upon the filter was determined. The weight of total liquid was then found by adding to the weight of the filtrate the weight of liquid left in the opium on the filter, and that of the liquid left in the flask, and, from this the total volume, i. e., the 70 C.c. plus the extractive matter dissolved thereby, was calculated by dividing by the specific gravity.

On working two samples of powdered opium in this way, the volume was found to be in the one case 70.83 C.c., and in the other it was 70.85 C.c.; whereas, according to Convey, the volume should be 72.8 C.c. Since the U. S. P. directs to take opium in any form, it seemed possible that, if lump opium which contains some moisture be used, the volume of liquid might be increased. A sample of lump opium was taken which contained 11% of moisture. 7 Gm. were weighed off, cut into small pieces and transferred to a flask. Then the lime and 70 C.c. of water were added, the whole thoroughly mixed by means of a stirring rod until a uniform mixture was obtained. The mixture was then allowed to stand for half an hour and finally placed upon a filter. The filtrate was weighed and its specific gravity taken, and the weight of the liquids left in the opium on the filter, and that of the liquid left in the flask, were calculated in the above-described manner. Experiments made with two samples gave the following results:

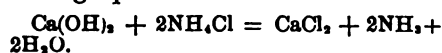
	SP. GR. OF FILTRATE.	PER CENT OF MORPH.	TOTAL LIQUID.
Exper. I.	1.01270	8.3%	70.39 C.c.
Exper. II.	1.01265	9.04%	70.19 C.c.
Average,	. . . .		70.29 C.c.

This gave an average increase of 0.29 C.c. Then a very moist lump opium containing 20.7% moisture was used and the volume of liquid was found to be, in this case, 70.61 C.c. These experiments, therefore, would seem to

* See the paper "Evaporation of Percolates," read at the Providence meeting of the Am. Pharm. Assoc., and printed on page 186 of our last number.
† Read at the Meeting of the Michigan State Pharmaceutical Association, Grand Rapids, Oct. 14th, 1886.

prove that the volume of filtrate directed to be taken by the Pharmacopœia (50 C.c.) is more nearly correct than that directed by Mr. Convoy (52 C.c.).

In the paper of Mr. Convoy, attention is called to the fact that some morphine is held in solution by the mother liquor. Mr. Herbert Lloyd, in an article (AMERICAN DRUGGIST, 14, 221), also states that there is enough morphine held in solution to cause an error of 1.2% to 1.8%. He believed that the alkaloid is dissolved by the excess of ammonia which is set free when ammonium chloride is added. The reaction may be given by the following equation:



He also says that morphine and lime are mutual solvents, that is, if morphine is added to lime-water, more lime will be taken into solution, and, hence, he comes to the conclusion that the greater the amount of morphine present in the opium to be assayed the

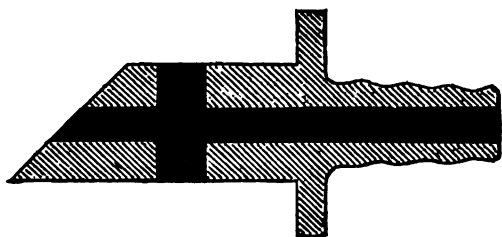


FIG. 6.—Valve for compression-pump.

greater will be the amount of lime and of ammonia set free, and as a result the greater the loss of morphine. Mr. Lloyd based this assertion upon the results of experiments made with weighed quantities of morphine, slaked lime, and ammonium chloride. He found that 50 C.c. of lime-water, in the presence of morphine, would dissolve 0.128 Gm. of Ca(OH)_2 , or 0.095 Gm. of CaO .

In order to determine the amount of lime held in solution in an actual assay, the following experiments were made: The mother liquor of the 50 C.c. filtrate was acidulated with sulphuric acid, evaporated to dryness, and heated in a platinum dish, and the lime estimated as CaSO_4 , which was calculated to CaO . In order to determine the relation between the proportion of morphine and amount of lime, a lump opium containing 7.88% of morphine, and for another experiment a powdered opium containing 11.4% of morphine, were used, and the following results obtained:

	AMOUNT OF MORPH. OBTAINED.	AMOUNT OF LIME (CaO).
Lump opium,	0.394 Gm.	0.202 Gm.
Powdered opium	0.570 "	0.231 "

So we see that the more morphine there is present, the greater is the amount of lime dissolved, and this experiment would seem to support Mr. Lloyd's statement with reference to the mutual solvent power of morphine and lime, although the increase in the amount of lime dissolved is not in the same ratio as the increase in the amount of morphine present. The amount of lime found to be present in the assay liquor, according to our experiments, is, however, about twice as large as the amount of lime contained in the 50 C.c. solution according to Mr. Lloyd, showing that other constituents of opium assisted in dissolving the lime, and it is not improbable that these constituents are present in varying proportions.

In order to determine now how much of the alkaloid is dissolved in the mother liquor after crystallizing the morphine, a solution was made to correspond as nearly as possible to the

assay liquor, and then a certain amount of morphine was used. The amount of lime (CaO) found to be present in the mother liquor of the lump opium was 0.202 Gm. This amount of lime was taken, slaked with a little water, transferred to flask and 50 C.c. of distilled water were added. On adding then 0.500 Gm. of pure morphine, it was found that some of the lime was left undissolved. Therefore, in another trial, a little less calcium oxide was used, the 50 C.c. of water and 0.500 Gm. of morphine added. Then, as in the U. S. P. process, 5 C.c. of alcohol and 25 C.c. of ether, and 3 Gm. of ammonium chloride were added and the mixture allowed to stand for 12 hours. The amount of morphine obtained was 0.442 Gm., showing that of the 0.500 Gm. taken 0.058 Gm. was retained in solution in the mother liquor.

In order to find out whether the morphine is held in solution by the excess of ammonia liberated or by the excess of ammonium chloride, the following experiments were made. By calculation it was found that, when 0.202 Gm. of calcium oxide are in solution, 0.399 Gm. of ammonium chloride are decomposed. Subtracting this from 3 Gm., we find that in this case there is an excess of 2.61 Gm. of ammonium chloride present in the assay liquor. This amount of ammonium chloride was then dissolved in 50 C.c. of pure water and 0.500 gm. of morphine added, and the solution allowed to stand for 12 hours, after which time 0.500 Gm. of morphine had lost 0.135 Gm. The amount of ammonia which would be set free in such assay was also calculated, and a solution of 50 C.c. of pure water containing that amount of ammonia was

flask be used, the 50 C.c. mark will be at the widest part and it would be an easy matter to make an error of 1 to 2 C.c. in graduating or in filling to the mark, as we found by repeated trials. In all of our experiments we used a narrow graduated cylinder to measure the filtrate.

Want of time has prevented us from continuing our experiments, but we offer the following conclusions as the result of our experiments.

1. The increase in volume by solution of extractive matter is not sufficient to warrant us in taking 52 C.c. of the filtrate as representing 5 Gm. of opium. The volume directed by the U. S. P. (50 C.c.) seems to be very nearly correct. At least it would require a large number of experiments to warrant us in changing that.

2. About 10% of the morphine in the opium is retained in the mother liquor after crystallizing the morphine according to the U. S. P.

3. Excess of either ammonium chloride or free ammonia increases the solubility of morphine in the mother liquor, and experiments should be made with a view to reducing the amounts of ammonium chloride and of lime.

4. The mixture of opium, lime, and water should *not* be allowed to stand in an open mortar, but might be made in a mortar if necessary and transferred to a stoppered flask or covered vessel of some kind to macerate.

5. The filtrate should *not* be measured in a bottle or flask, as directed by the U. S. P., but in a narrow graduated cylinder.

An Extraordinary Professorship of the Chemistry of Food is to be established in the University of Berlin.

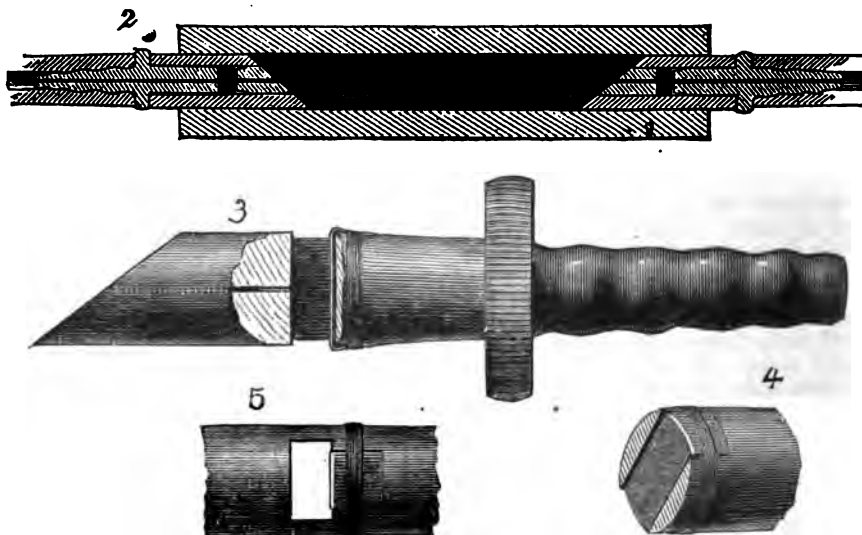


FIG. 2.—Longitudinal section of simple air-pump.

FIG. 4.—Transverse section showing valve in perspective.

FIG. 3.—Valve casing partly in section.

FIG. 5.—Plan view of valve.

found to dissolve after 12 hours' standing 0.110 Gm. of morphine. Thus it was shown that both ammonium chloride and free ammonia in solution exert a distinct solvent action upon the alkaloid. It is therefore probable that by using about 1.000 Gm. of ammonium chloride instead of 3.000 Gm. as suggested by Mr. Convoy, the amount of morphine held in solution will be greatly reduced.

There are one or two points in the detailed directions of the Pharmacopœia which, it seems to us, are open to criticism. The directions are to triturate the opium, lime, and water together, and leave the mixture in a mortar for half an hour. The evaporation of moisture from an open mortar, especially if the atmosphere happens to be dry, is not inconsiderable, and it is quite probable that the failure to obtain the desired amount of filtrate can be explained, in some cases, in this way.

The U. S. P. directs that the filtrate be collected in a wide-mouthed bottle or flask (having a capacity of about 120 C.c. and marked at 50 C.c.). If a

INEXPENSIVE AIR-PUMP.

GEORGE M. HOPKINS describes, in a recent number of the *Scientific American*, a simple and efficient form of air-pump which can be constructed by any one who is at all adept in the use of tools, at an expense of a dollar and a half for materials. Mr. Hopkins especially intended the pump to be used for illustrating vacuum and pleum experiments, but it will be apparent at a glance that it is also equally capable of being used to hasten the operations of filtering and distilling on a small scale.

The materials required are as follows: A piece of so-called pure rubber tubing one and three-fourths inches external diameter, one inch internal diameter, and nine inches long; a piece of pure rubber tubing one inch external diameter, five-eighths inch internal diameter, and five inches long; a piece of heavy pure rubber tubing five-eighths inch external diameter, and four feet long; two wooden valve casings (shown in Fig. 3); a strip of the best oiled-silk, three-eighths

inch wide and eight or ten inches long; and some stout thread.

The piece of one-inch rubber tube is cut diagonally at an angle of about thirty degrees, so as to divide it into two similar pieces. The wooden valve casing is pierced longitudinally with a one-sixteenth inch hole and transversely with a hole one-half inch square, and thoroughly shellacked or soaked in melted paraffin to render it impervious to air. The longitudinal hole is cleared out, and the walls of the square transverse hole are smoothed. One of the walls of the square hole into which the one-sixteenth hole enters forms one valve-seat, and the other forms the other valve-seat. The valves each consist of two thicknesses of the oiled-silk strip stretched loosely over the valve-seat, and secured by the thread wound around the wooden valve casing. It will, of course, be understood that, when the valve casings are placed in the one-inch rubber tubing, and the one-inch tubes are placed in the ends of the larger tube, as shown in Fig. 2, the valves must both be capable of opening in the same direction, so that the air may pass through the pump as indicated by the arrow, entering by one valve and escaping by the other.

The pieces of rubber tube inclose the valve casings, so that each valve has a little air-tight chamber of its own to work in. The bevelled ends of the rubber-tube are arranged as shown in the engraving, and the inner ends of the wooden valve casings are bevelled to correspond, so that, when the large rubber tube is placed on the floor and pressed by the foot, there will be very little air space left in the pump. The four-foot rubber tube is attached to one end of the pump for vacuum experiments, and to the opposite end for plenum experiments. To avoid any possibility of the sticking of the valves, the valve-seats are rubbed over with a very soft lead pencil, thus imparting to them a slight coating of plumbago, to which the oiled-silk will not adhere. As an elastic rubber pump-barrel, of the kind described, requires considerable pressure of the foot to insure the successful operation of the pump, it is advisable to construct a treadle like that shown in Fig. 7. It consists of two short boards hinged together, the lower one having a shallow groove for the reception of the middle part of the pump. The edges of the upper board are bevelled at about the same angle as the ends of the one and one-fourth-inch rubber tube. The width of the hinged boards should be somewhat less than the length of the chamber in the pump. A mark is made on the side of the larger tube at one end to indicate the top, the proper position for the pump being that shown in Fig. 2.

The pressure of the foot on the side of the pump barrel expels the air through the discharge valve, and when the barrel is released, its own elasticity causes it to expand, and, while regaining its normal shape, it draws the air from any vessel communicating with the suction valve.

A vacuum sufficient for most of the ordinary experimental work may be produced by means of this pump in a short time. A gauge may be improvised by attaching the suction pipe to a piece of barometer tube about thirty inches long, and dipping the end of the tube in mercury, using a yard measure as a scale, as shown in Fig. 1. The pump will be found to compare favorably with piston pumps.

When it is desired to construct a

pump of this kind for compressing air or for a low vacuum, the elastic tube forming the pump barrel may be larger and thinner, and the hole through the wooden valve casing may be made larger, as shown in Fig. 6, and the oiled-silk valve may be replaced by a simple rubber flap valve, held in place by a single tack.

A New Solvent of Urinary Calculi.

At a recent meeting of the French Therapeutical Society, a specimen of pichi, or piche, was shown by M. Limousin. In its native country



Fig. 1.—Testing simple air-pump.

(Chili) it was believed to disintegrate urinary calculi. M. Limousin expressed the belief that piche acted especially on the mucin which held together the different elements of calculi and dissolved it, and lessened vesical catarrh, a belief which, in consequence of the resin it contained, was shared and confirmed by M. Dujardin-Beaumetz. A fluid extract has been prepared, of which four dessertspoonfuls represent 30 Gm. of the plant—the dose generally administered in 24 hours.

[Pichi is a Chilean name applied to the bitter, resinous leaves of *Fabiana imbricata* R. et P., nat. ord. Solanaceæ. The name appears to have some connection with the name of a disease of sheep and goats, viz.: *pizquin*, in which it has long been used as a remedy.—Ed. AM. DR.]

Piperonal.—Dr. Ricardo Frignani has published in the *Giornale delle Scienze Mediche* the results of a number of experiments which he has made with piperonal. He states that it possesses both antipyretic and antiseptic properties. The antipyretic effect is not of the most active or energetic kind, yet it is sufficient in many cases. According to the author, it is best given in fifteen-grain doses, repeated every two hours, or three or four times a day. The most noteworthy disagreeable effects are nausea, eructations, and dryness of the throat. Its antiseptic action appears much more marked, and it is believed that, in this respect, piperonal deserves a high rank among drugs of this class.

Piperonal is an aldehyde corresponding to piperonic acid, and is obtained

by the oxidation of piperine. It forms small, white, prismatic scales, possessing a strong odor of vanilla [or rather, of heliotrope, for which reason the substance is sold in the market under the name *heliotropin*.—Ed. AM. DR.] A small quantity placed upon the tongue produces a sensation analogous to, but more persistent than that caused by mint. It melts at 125° F., and at a higher temperature volatilizes completely. When ignited, it burns with a flame and smoke like those of camphor. It is insoluble in cold water; in hot water it melts and looks like drops of oil. It dissolves readily in alcohol and in ether.—*Monthly Magazine*.

Vinegar as an Antiseptic.

Taking advantage of the known utility of vinegar as a preventer of decay in culinary processes, Dr. Engelmann (*Cbl. f. klin. Med.*, 14, '86) has made a number of experiments with vinegar in diphtheria, and comes to the conclusion that it is a powerful antiseptic of almost specific effect in that disease. He employed either common vinegar or the official acetum, internally 1:4, as gargle 1:2, and undiluted, as spray 1:2 to 3, if applied with a brush, undiluted. An addition of 3:10 vinegar sufficed utterly to prevent the growth of micro-organisms. It is a special advantage that the taste is not disagreeable, and that, even when applied undiluted, there is no danger of any cauterizing or intoxicating effect.

The Birthplaces of Vegetables.

The *Popular Science News* says that peas are of Egyptian origin. Celery originated in Germany. The chestnut came from Italy. The onion originated in Egypt. The nettle comes from Europe. Tobacco is a native of America. The citron is a native of Greece. The pine is a native of America. Oats originated in North Africa. Rye originally came from Siberia. The poppy originated in the East. The mulberry originated in Persia. Parsley was first known in Sardinia. Spinach was first cultivated in Arabia. The sunflower was brought from Peru.

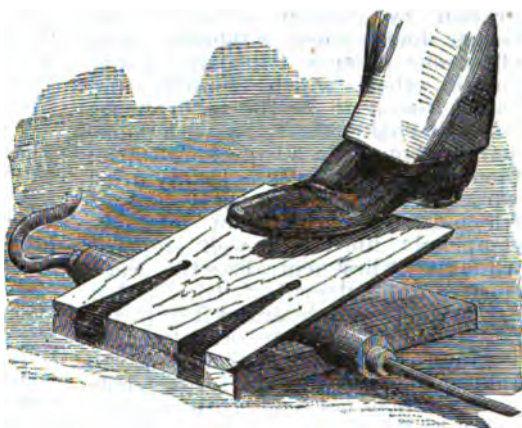


Fig. 7.—Treadle for air-pump.

The walnut and peach came from Persia. The horse chestnut is a native of Thibet. The cucumber came from the East Indies. The radish originated in China and Japan.

Female Drug Clerks in Holland.

In Holland ladies are gradually usurping the occupations of the pharmaceutical assistants. Out of a total of 55 candidates, 19 out of 31 female candidates, and only 8 out of 24 male candidates, were successful, in the recent State examination.

NOTES TO A FEW OF THE
QUERIES.BY H. T. CUMMINGS, M.D., PORTLAND,
MAINE.*

Query 5. "A preparation of commerce is now sold under the name of Concentrated Nitrous Ether. Is it possible to keep such a substance in order to prepare the spirit extemporaneously?"

We believe that if the eminent firm of manufacturing chemists, whose offer upon the market of concentrated nitrous ether first attracted our notice, had looked before they leaped, we should not have this question offered for consideration.

Thirty years ago, Dr. Squibb communicated a paper to the *American Journal of Pharmacy*, in which, although in so many words not definitely expressed, he conveyed a doubt of the stability of the spiritus nitri dulcis, which would imply a still stronger doubt as to that of the concentrated nitrous ether. And this doubt seems to be confirmed by what we find in Gmelin's "Handbuch," iv., 763, where the decomposition of nitrous ether is especially considered.

This ether becomes acid by long standing in bottles filled, stoppered, and in those containing air. It is supposed that the combined nitrous acid becomes free nitric acid. According to Monheim, however, the acidification depends nearly upon absorbed nitric oxide, which has been changed into nitric acid by attraction of oxygen from the air. If, therefore, spiritus nitri dulcis (a mixture of nitrous ether and alcohol) is allowed to remain for a long time in contact with the air, or is shaken with it until it takes up no more oxygen, and is then freed from the developed acid by drawing it off over magnesia, it will not become acid afterwards. According to Stolz, the oftener spiritus nitri dulcis, treated after Monheim's way, is exposed to the air and neutralized by magnesia, it becomes constantly more feebly acid, because in this manner all the ether is gradually destroyed. According to Flashoff, spiritus nitri dulcis is rendered stable by several days' contact with manganese binoxide, the oxygen of which substitutes that of the air, and distillation over magnesia. But, according to Duflos, this spirit becomes acid unless it is dehydrated by distillation over calcium chloride. Brame also recommends this dehydration by calcium chloride; but Geiger doubts whether thereby a part of nitrous ether is not changed into chloric ether, which Schmidt and Duflos found to be the case; hence Schmidt shakes the spirit with potassium carbonate in a capacious bottle; then rectifies it over strongly-dried white bole, whereby a spirit is obtained which is stable when kept in flasks completely filled and well stoppered; while Duflos first neutralizes this crude spirit with pulverulent calcium hydrate, and then dehydrates it by distillation over lime nitrate, or, better, potassium carbonate. According to Duflos, this spirit keeps for a whole year, and does not redden litmus paper unless by the addition of water, which provokes decomposition.

Gmelin's summary of this is: "perhaps acid is already present, which first exerts its reaction upon litmus by the addition of water. In this case, success has not been attained, and perhaps it never can be, to prepare a perfectly stable spiritus nitri dulcis."

We have never seen but one sample of the preparation in question, and that purported to be concentrated nitrous ether diluted with alcohol in the proportion of one in ten, ostensibly to protect it from oxidation. This ex-

periment did not prove to be a success, for the acid was evident to the smell and taste, and strongly and instantly reddened litmus paper.

Gmelin describes seven different processes for preparing nitrous ether, each modified by one or more of twenty-six chemists, some of them the foremost names in Europe in this field. A review of some of them may not be uninteresting.

The first (and the second is like unto it, with a slight variation in proportion and manipulation) is described as follows: in a stout, well-corked and thoroughly-cooled flask fuming nitric acid is mixed with alcohol. After some days, the liberated gas is allowed to issue through a puncture in the cork, and the layer of ether which has risen to the top is withdrawn by a separating funnel. Gmelin observes that, on account of the liability to explosion, this operation is rather dangerous. We should think so.

The third consists of distillation of a simple mixture of alcohol and nitric acid. It appears to be the most popular of the seven, as of the twenty-six chemists quoted eleven have tried their hands upon it.

If our memory is not at fault, this is the U. S. process of 1870, and is the one which we have worked with tolerable success.

The fifth consists in adding to the mixture of acid and alcohol some deoxidizing constituent which will reduce the nitric to nitrous acid, without involving the expense of a pint of alcohol. In this process, E. Kopp's practice is clearly the best. He introduces into a distilling apparatus equal measures of alcohol and nitric acid, together with some copper filings or dippings. The reaction, even in large quantities, is never violent, and the distillation is completed almost without the application of extreme heat. The vapor is first conducted through a flask full of water, then through a long calcium chloride tube, is condensed in a receiver surrounded with a freezing mixture, as perfectly pure nitrous ether, free from aldehyde, and consequently not turning brown with potash.

We would answer the sixth query by another: Is there a concentrated nitrous ether directed in the Pharmacopœia? We can find none except that which is to be immediately diluted with alcohol to form the *spiritus ætheris nitrosi*, and that, of course, should be 100 per cent. In the spirit the Pharmacopœia demands 5 per cent of nitrous ether, but whether the apothecary or the patient gets that in all cases can only be determined by the appropriate tests.

Query 13. "Does the commercial compound spirit of ether contain the ethereal oil as required by the Pharmacopœia?" We do not know how it is now, but while we were in active practice in pharmacy, a period of 25 years, we never saw any compound spirit of ether which contained ethereal oil until we imitated and reported Dr. Squibb's experiments in our own imperfect manner, with limited accommodations and apparatus. The commercial article then furnished corresponded to Dr. Squibb's description of it in his article on the subject in the *American Journal of Pharmacy*, 29 years ago, and we confess that to-day we should be shy of any package which did not bear the label and other genuine marks of coming from the laboratory of either Dr. Squibb or Professor Diehl. Cupidity on the one hand and ignorance on the other have combined to destroy faith in and the reputation of a remedy which formerly commanded the confidence of the medical profession. It would seem, moreover, that whether Hoffmann's anodyne contains ethereal oil or not is practically of very little consequence, since in the days of

elixirs, fluid extracts, sugar-coated pills, and elegant pharmacy, generally old, reputable, and well-established remedies are relegated to the back seat, or are driven further even to the wall, or else quite out of court.

Query 16. *Cannot a more economical process than the official be suggested for making ethereal oil?* When the best results obtained by skilful scientific and practised operators show that it requires from 10 to 11 pounds of sulphuric acid, and from 4½ to 7 pounds of alcohol to produce 1 oz. avoirdupois of ethereal oil, this question is one which would naturally force itself upon the attention of every one at all conversant with the matter. This enormous waste seems to arise from the formation of several compounds, the production of which is not sought, viz.: sulphuric ether, carbonic acid, carbonic oxide, olefiant gas, acetic acid, acetic ether, thiomelanic acid—all at the expense of the alcohol, although the sulphuric acid has some share in the most of them. In Dr. Squibb's paper on this subject, printed in the *American Journal of Pharmacy* in 1857, he remarks: "The great disproportion between the material and the product under the most favorable circumstances, made it most desirable that some economical process should be found for this preparation, and the writer has long been under the impression that by the distillation of anhydrous sulphovinic acid better results might be had. The few trials made in this direction have, however, thus far given no hopes of success as far as practical application is concerned."

The volume and amount of the thiomelanic acid would seem adequate to account for the major part of this waste of alcohol, especially when we take into account the preponderance of carbon in its composition, none of which can be derived from the acid. A mean of four analyses gives 66.67 per cent of carbon on this compound. And it seems to us that when this black mass is fully formed, the distillation of sulphovinic acid is practically terminated, all the alcohol having been consumed, and only terhydrated sulphuric acid remaining entangled in the vesicles or interstices.

But what is *Oleum Æthereum*? From the variety of nomenclature employed, it should seem that chemists entertain different views of its constitution. But one thing is certain, that sulphovinic acid is an important constituent thereof, and it may not be irrelevant to our discussion to consider the formation of this compound. Oil of vitriol mixes with alcohol with a remarkable evolution of heat, increasing even to ebullition of the uncombined alcohol, and is thereby changed, provided the mixture is not kept too cold, into sulphovinic acid and dilute sulphuric acid.

This formation of sulphovinic acid was discovered by Sertürner. It was noticed that the mixture, after dilution with water, upon digestion with excess of lead oxide or calcium carbonate, yielded a smaller amount of sulphate than would have been expected, and that the liquid filtered from the sulphate contained an easily-soluble crystallized salt, the sulphovinate. [The author now quotes from Gmelin, among other passages, the following:]

As the matter is very instructive, we quote further from the section on sulphovinic acid: To 1 atom (46 or 55 parts) absolute or 85 per cent alcohol, surrounded with a freezing mixture of ice and salt, is added 1 atom (49 parts) oil of vitriol, slowly and with constant stirring, so that no heating can take place; the mixture contains no sulphovinic acid, not even after several days, provided that it is surrounded with melting ice. But at 10° to 15° C. the sulphovinic acid gradually makes its appearance, so that after three or four

* Read at the meeting of the Am. Pharm. Assoc. at Providence.

days 77 per cent of the sulphuric acid is thus converted. This takes place at 30° to 35° in a few hours, and on immersing the mixture in boiling water in a few minutes; but strong sunlight has no influence upon it. If sufficient alcohol is poured into oil of vitriol to induce strong heating, the complete formation of sulphovinic acid follows instantly. This proportion of sulphovinic acid does not increase by continued immersion and heating; of 100 parts of sulphuric acid, when equal atoms of alcohol and acid are employed, 77 are converted into sulphovinic acid. With two atoms absolute or 85 per cent alcohol, phenomena are exhibited; but in this case it is much easier to hinder the formation of sulphovinic acid by cold, and by warming of the mixture 73 or 74 per cent of the sulphuric acid, at the most, are converted into sulphovinic acid. On the other hand, by the employment of 1 atom alcohol and 2 atoms acid, sulphovinic is formed under all circumstances, even under severe cold, and then there is always 56 per cent of sulphuric acid changed into sulphovinic acid; whether the alcohol is found in the acid, or the reverse; whether it is cooled or not cooled, whether the mixture is immersed and heated long in boiling water or not, in which it suffers no loss of weight*—a proof that the alcohol used for the formation of the sulphovinic acid is not in any manner combined.

Of the treatment of the sulphovinates for obtaining ethereal oil, we have the following description:† "Crystallized calcium sulphovinate is carefully and completely dried in *vacuo*; it is then subjected to distillation, and the distillate is purified as follows: the distillate is shaken with ice-cold water, which frees it from sulphuric acid, and part of the sulphurous acid, alcohol, and ether; it is separated from the water and introduced under the receiver of the air-pump, which is slowly and gently worked so as to evaporate the ether and sulphurous acid without causing too violent ebullition."

From the foregoing observations by accomplished European chemists, it should appear that nothing is easier than to prepare sulphovinic acid in quantities to meet any requirements. The chief difficulty to be encountered seems to be proper preparation and treatment of the sulphovinates before distillation and the management of the process. We have received the impression from the operation of ethereal oil by distillation of the mixture of alcohol and acid, that sulphovinic acid was very sparingly produced, but when we learn that from 50 to 75 per cent of any given quantity of sulphuric acid can be thus easily and rapidly converted, it seems to open the road to a more economical and productive process for ethereal oil than we had thought possible. We know nothing of the difficulties to be encountered, or the phenomena to be observed in conducting this operation; but we hope that the discouraging tone of Dr. Squibb's remark, quoted above, will not deter any one possessing the means and appliances necessary to travel the road above indicated with certainty and success.

Query 57. *The green color in oil of cajuput is generally due to copper, sometimes to chlorophyll. Is the contamination with copper still prevailing, and, if so, how much copper does the oil contain, or how much can it take up? And in what condition does the copper exist in the oil?* We quote once more from the authority already so often appealed to with instruction and satisfaction:

"Commercial cajuput oil contains

generally copper dissolved, by which its original green color is increased, for it is met with of a greenish color without containing copper. The copper, which arrives in the oil by its being dispatched in copper flasks, can never be recognized by its deeper blue upon being shaken with ammonia, nor is it easily thrown down by potassium, iron, or zinc; but it is better detected by the electric current. If the poles of a voltaic battery are immersed in cajuput oil mixed with water, the wire of the positive pole becomes covered with copper oxide by the copper contained in the oil; the wire of the negative pole liberates hydrogen. Upon the addition of aqueous ammonia, gas is liberated at both poles; besides that flocculi of copper form at the negative pole and the oil becomes yellow. The dissolved copper may also be detected on shaking the oil with aqueous potassium cyanide by the red precipitate of copper cyanide. Copper may also be separated by distillation, as it passes over only in the last portion of the distillate. A Paris cajuput oil contained, according to Guibourt, 0.022 per cent of copper ("Handbuch," vii., 313)."

Query 83. *What is the best paste for labelling bottles, and how can paste best be preserved?*

A formula for flour paste which we have used with more satisfaction than anything else we have ever tried is made as follows:

Put into a skillet or pint tin can 8 oz. water, and $\frac{1}{2}$ oz. alum, set this on your oil-stove or other source of heat, and let it boil. While waiting for it to boil, weigh out 2 oz. good flour and put into a mortar, add 4 oz. water, gradually stirring it with the pestle to a smooth cream free from lumps. By this time your alum water perhaps is boiling; if so, decant your flour mixture in it, and stir till the flour is cooked, which you will know by its change from a dead white to an opalescent appearance like starch boiled.

Remove from the fire and allow it to cool. While still a little warm, add 15 drops of a mixture composed of good wood creasote and oil of cloves, 2 drachms each, which it would be well to prepare and keep in a bottle for this very purpose.

For this quantity of paste, don't use more than $\frac{1}{2}$ oz. alum. If you do, you will be anathematizing the careless fellow who dropped your brush on the floor and put it back without cleaning it. An excess of alum will fill the paste with small crystals like grains of sand.

Paste prepared in this way will keep an indefinite length of time without souring or moulding. It will bear frequent additions of water as it becomes dry.

Kauri Gum as a Medicinal Substance.—Many years ago Dr. Hammond, of Bournemouth, presented me with a fine specimen of kauri gum, which one of his sons had brought from Auckland, in New Zealand. In experimenting with the gum thus supplied, I have found that it may be made to perform many useful services in medicine. When the gum is burned—and it burns briskly—it gives out a very pleasant odor which destroys the odor of putrefying organic substances most effectively. Dissolved in spirit, it makes a fluid which burns in the lamp with good effect. Reduced to a fine powder and shaken with water, it communicates to the water new properties, so that, sprayed in a room, it renders the air ozonic. It mixes well with ointments, forms a good combination with soap, and, combined with iodine, is a useful deodorizer and disinfectant. The gum is from a pine, the kauri tree, *Dammara australis*.—*The Asclepiad*.

Criticisms of Familiar Prescriptions.*

I DESIRE to call attention to some incompatible prescriptions that have come to my notice during the past few months, and suggest methods of modifying some of them, so as to render them compatible without setting aside the therapeutic effect intended.

Incompatible prescriptions may be divided into three classes—pharmaceutical, chemical, and physiological.

Pharmaceutical incompatibility nearly always depends upon the disproportion between the alcohol and water in the preparations joined in the prescription; in such a mixture as

Tinct. Nucis Vom.,
Ext. Ergotæ Fl. 3i.

Alcohol is in excess; the latter being made with dilute alcohol, and containing substances not soluble in strong alcohol. These are, therefore, precipitated when added to tincture of nuxvomica, which contains 8 parts of alcohol to 1 part of water.

The precipitate clings to the bottle, causing considerable loss of the medicinal constituents of the ergot. After several experiments, I found the following to give a clear mixture:

Tinct. Nucis Vom.,
Ext. Ergotæ Fl. 3iij.
Aque fl. 3ij.

Another incompatibility of the same order is

Ext. Ergotæ Fl. fl. 3iiss.
Tinct. Ferri Chlor. fl. 3ss.

The precipitate in this case may be avoided by diluting the tincture of iron with an equal volume of water.

Another form is

Resinæ Podophylli gr. i.
Syr. Rhei Aromat. fl. 3iij.

The resin being insoluble in the syrup, no matter how intimately they are mixed, it will separate in time, and adhere to the bottle. The addition of a small quantity of aromatic spirit of ammonia, which mixes very well with the syrup, will dissolve the resin and avoid the objections.

It is a common thing to receive a prescription for compound tincture of cinchona, combined with aqueous fluids; a precipitate being almost invariably the result. Very few tinctures and fluid extracts bear dilution with water. When dilution is necessary, simple elixir will generally do better.

Chemical incompatibilities are dependent on the laws of chemistry, and the nature of the substances involved is materially changed. The only remedy is to avoid the use of the incompatible substances in the same mixture. I have frequently received this prescription:

Zinci Sulphatis gr. xx.
Pot. Sulphidi gr. xxx.
Aque fl. 3iv.

The zinc sulphate and potassium sulphide react to form insoluble zinc sulphide and potassium sulphate.

Also

Quin. Sulph. gr. xxx.
Ac. Sulph. Dil. q. s.
Pot. Iodidi 3ij.
Aque q. s. fl. 3ij.

Potassium iodide produces precipitates with most alkaloids, and in this case gives such a bulky yellow precipitate with the quinine as to render the mixture unfit for use.

Another:

Hydrarg. Bichlor. gr. i.
Sodii Biboratis gr. xx.
Glycerini fl. 3iv.
Inf. Picis Liq. q. s. fl. 3iv.

By action of the borax an insoluble mercury salt is formed, and as the mixture is intended for a spray, no effect can be expected from the mercury.

* Comp. "Handbook" iv., 150.
† "Handbook" vi., 538.

* DR. JAMES A. KYNE in *The Polyclinic*.

Another, similar to the above, with zinc sulphate instead of mercuric chloride, to be used also as a spray, is rendered inactive by the zinc forming an insoluble salt with the borax.

In the following,

Magnesii Sulph.....	3 ss.
Sodii Phospha is.....	3 ss.;
Sodii Chloridi.....	gr. xx.
Ferri Sulph.....	gr. x.
Inf. Quassiae.....	fl. ʒ iv.

insoluble magnesium phosphate is formed, making a very unsightly mixture.

So also

Morph. Sulph.....	gr. i.
Syr. Scillæ Co	fl. ʒ i.
Sodii Bicarb.....	ʒ i.
Aquæ.....	fl. ʒ iv.

The alkaline carbonate causes the morphine to precipitate, and, after standing several days, all can be collected on a filter; the filter giving no reaction for morphine.

Another on the same principle is

Morph. Sulph.....	gr. vi.
Sodii Bioratis	ʒ iv.
Aquæ Camphoræ.....	fl. ʒ vi.

Here the borax acts the same as the carbonate in the previous case.

Prescriptions similar to the following are common, owing to the fact that licorice is an excellent vehicle for quinine.

Quininæ Sulph.....	gr. xxx.
Acid. Sulph. Dil.....	q. s.
Ext. Glycyrrhiz. Fl.,	
Syrupi,	
Aquæ.....	aa fl. ʒ i.

Glycyrrhizin, the sweet principle of licorice, is a compound of glycyrrhizic acid and ammonium, and in the presence of acids is decomposed; glycyrrhizic acid being set free. This is a very peculiar insoluble gelatinous substance which carries the quinine down with it, and forms a semi-solid mass in the bottom of the vessel. The ammonia in the fluid extract aids in the precipitation by neutralizing some of the acid which holds the quinine in solution.

It is hardly within my province to discuss physiological incompatibility, but the prescribing of pepsin, combined with sodium bicarbonate, is so frequently done, and is so gross an error, that it deserves mention. This practice has become so common that a certain hospital in this city has the following formula in its pharmacopœia:

Pulvis Pepsini et Sodæ.

Pepsini Sacchar.....	gr. ij.
Sodii Bicarb.....	gr. i.

M. ft. chart. No. 1.

An Improvement in Ointment—Brooke's Salve Sticks.—Dr. Brooke has brought before the Manchester Medical Society a number of ointments prepared with a solid base composed of cocoa butter, wax, and oil, or lanolin, and cast into the form of sticks, which he terms "salvesticks." He has found them particularly useful in making applications to the face and hands, since, their melting-point being high, they do not run at the temperature of the body, as do ointments prepared with the ordinary bases, and when dusted over with powder, the parts are practically invisible as shiny places. Covered with an adhesive plaster, they offer a mode of applying remedies to the skin. With this protective covering, they are, we are assured, particularly applicable to the treatment of psoriasis by chrysarobin. The patient may bathe without fear of removing the dressing. These salve sticks are supplied in small cases like those used for cosmetics, so that they can be conveniently carried in the pocket of the practitioner or the patient. This is looked upon as a cleanly and economical method of applying ointments of different kinds.—*Monthly Magazine.*

EXTRACTION APPARATUS.

R. BENSEMAN describes (in *Repert. f. Anal. Chem.*, 1886, 390) an extraction apparatus for volatile liquids which consists of two glass tubes. The inner one is intended for the reception of the substance to be extracted, and has a small opening near its upper end where the volatilized vapors enter. The outer tube is used upon the inner near the neck. The volatile solvent passes in vapor in the direction of the arrows, and finally drops back upon the substance in the inner tube.

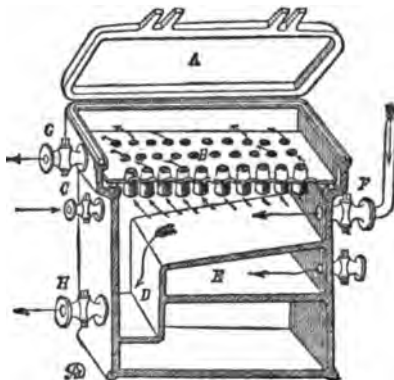


Permanent Ink Pads.

VOMACKA recommends the following substitute for the usual marking pad and vial of ink:

Thirty to forty parts of concentrated glycerin are saturated with the desired color (blue, red, green, black, etc.) which must be an aniline color of the darkest corresponding tint, and soluble in water. Ten parts of glue are soaked in cold water for twenty-four hours, the excess of water then poured off, the swelled glue dried rapidly between towels, and then melted on a water-bath in the above-mentioned glycerin, of which a larger or smaller quantity is required, according to the quality of the glue. The excess of water is evaporated off, taking care not to stir the mass so as to incorporate air-bubbles, and the mass is then poured into suitable receptacles.

If, on standing, any air-bubbles show themselves, they may be removed with a stiff cardboard. The smooth surface of elastic glue now represents the color-



The Syrup-Filter of Emile De Buck.

pad, and yields up its color evenly and slowly. If the mass becomes uneven it may be restored by simply melting, and if it should become a little hard on the surface, it need only be rubbed over with a sponge dipped in hot water.

If metallic stamps are to be used upon these glue-pads, the smooth surface of the former should be roughened by fine emery or sand-paper.—*National Druggist.*

Detection of free Mineral Acids in Vinegar.

DR. FÖHRING recommends sulphide of zinc for this purpose. This compound is not affected by acetic acid, either concentrated or dilute. Hence, when sulphide of zinc is treated with acetic acid or vinegar, no hydrosulphuric acid gas is given off. On the other hand, sulphuric and hydrochloric acids, even when highly diluted, decompose the above-named salt, and liberate hydrosulphuric acid.

Therefore, if vinegar is heated, with a little sulphide of zinc, in a test-tube, no odor of hydrosulphuric acid should be given off.—*Chem.-tech. Central-Anz.*

FILTERING APPARATUS FOR CANE-JUICE, SYRUPS, ETC.

WE take from *De Indische Mercur* the description and cut of this handy and ingenious piece of apparatus, since, with slight modifications, it can be readily adapted for a variety of purposes in chemical and pharmaceutical manufacturing laboratories. It is especially suited for the filtration of saccharine and other more or less viscid fluids; thus it can be employed in filtering a large number of vegetable juices and extracts, oils, fats, crude glycerin, various tar and petroleum products, etc.

The juice or fluid to be filtered is retained in suitable tanks or other vessels at an elevation, according to the inventor, of from 3.5 to 5 meters above the level of the filter-chamber, but it is evident that this height may be increased with advantage when additional pressure is necessary or expedient. It enters the filter-chamber by the tap F, as shown by the arrows. D is a well in which any "foots" or sediment gradually deposits itself, and from whence it may be periodically removed by opening the cock H. Steam is admitted into E, for the purpose of retaining the apparatus at any required temperature.

The actual filtration takes place by ascension through the plate B, which is pierced with a number of holes in which the filtering cones are tightly and accurately fitted, although they are removable when necessary, and the clear filtrate passes on through the exit-tap G. Whenever required, for cleansing purposes, steam can be admitted by way of C, and not only are the under surfaces of the filtering-cones (*viltstoppen*) cleared by this means, but the removal of deposited matter, in the well D, is thus greatly facilitated.

The filtrate which is forced through the filter-cones is stated to be purer and brighter than can be otherwise obtained. The thickness of the filter-cones as compared with the depth of the porous media in the filters of Purrez and of Hélaers, for instance, is some 60 times greater, or about 3 centimeters, instead of half a millimeter only, and, in the case of cane-juice, analyses can be cited to show more distinctly the advantage of this apparatus.

For purposes of thorough cleansing, other than with the steam current previously referred to, the plate B can be readily lifted entire, and replaced by another with a fresh set of filter-cones. These latter, however, can be used for two months or more before needing renewal.—*Brit. and Col. Drug.*

Novel Use of the Sand-Blast.

THE latest application of the sand-blast for manufacturing purposes is for peeling potatoes, without material loss of the starchy matters, in starch factories, distilleries, etc. The raw potato is either brought under the blast, and turned until the peel is removed—an operation which is said to be quite rapid—or the blast is ejected upwards from a nozzle, and potatoes are thrown upon the jet, where they are whirled about in the same manner as the paradoxical ball upon the jet of water issuing from a fountain.

Naphthalin as an Anthelmintic.

Dr. Coriander, of Samarkand, recommends naphthalin as a valuable and economical remedy, especially in country and military practice, for worms, both tænia and ascarides. He gives children of from one to three years of age 2 or 3 grains twice a day. In the case of adults, he gives from 20 to 80 grains a day in powder with sugar.

A NEW COMMINUTING MACHINE.

THE apparatus here described has been designed, primarily, for comminuting various kinds of solids used in cooking, but it is also serviceable for certain pharmaceutical operations.

It consists of an exterior case *a* with a hopper *b*, which latter may be lengthened by an extra tin hopper *b*. Both the case and the hopper proper are enamelled inside. Each machine is provided with a series of cutters or cutting discs, which are made of hardened and nickel-plated sheet steel, and are in the form of hollow segments of a globe, which are easily inserted through the central axle, and fastened by a thumb-screw *c*. The axle itself is turned by the winch *d*. The whole arrangement is fastened to the edge of the table by a clamp. When soft substances are to be cut, such as beans, a special inset *e* is used. This fits close to the disc, and contains two grooves for receiving the beans, etc. For harder substances, another special inset *f* is placed into the hopper, which latter is thereby closed at an acute angle. The object of this is to prevent the substance which is to be ground from being wedged in, as the bottom part of the hopper becomes narrower towards the cutting edge. This last-named inset is, however, not needed for cutting soft fruits, or for any substance of about the consistence of boiled potatoes. If raw potatoes, cacao, almonds, or the like are to be comminuted, the inset *f* is necessary.

Some of the cutters are shown in the accompanying smaller cuts (*g*, *h*, *i*). Each machine is accompanied by two cutting discs having fine holes, and one with larger holes; also by two discs for making thin or thick slices. The discs may be changed without difficulty at any moment. Before they are put away, they must be thoroughly cleaned, and then rapidly dried by exposure to a moderate heat.

The capability of this apparatus is said to be quite extraordinary. For instance, 50 lbs. of blanched and dried almonds may be comminuted by means of it within 15 minutes, according to the report of one of the purchasers.

The inventor and patentee is Alexander Obermeyer in Rittershausen (Barmen), Germany. The apparatus is also patented in this country. Its price at the depot of the inventor is 30 marks, or about \$7.50.

Urethan.—According to the *Pacific Med. and Surg. Journal*, some urethan of English manufacture, which is now being sold, has a most offensive mousy smell, resembling that of acetamide. Dissolved in water a solution, nauseous both in taste and smell, is produced. When properly made, urethane has no unpleasant smell or taste. The English urethan seems as effective, but until it is more carefully prepared, the more agreeable German drug alone should be used.—

Poisoning by Carbon Disulphide.—A French journal states that a number of persons have recently been poisoned in France by eating asparagus grown in localities where small amounts of sulphide of carbon existed in the soil. The symptoms were diarrhoea, with cramps.

Antifebrin.

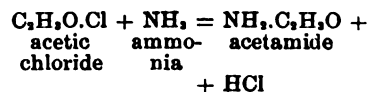
THE list of antipyretics has again been increased by the accidental discovery of antifebrile properties in a derivative of aniline, viz., *phenylacetamide* or *acetanilide*, through Drs. A. Cahn and P. Hepp. For convenience, the substance has been named *antifebrin*, and it has been reported to possess antipyretic powers four times as great as those of antipyrin.

Antifebrin is administered in doses of 5 to 30 grains per day; its effects are manifested in about one hour, and reach its maximum in about four hours. It decreases the temperature in febrile diseases, but does not affect that of the healthy subject.

Antifebrin has also been observed to stop the excruciating pains accompanying acute rheumatism.

From the reports so far published, the substance appears to be less liable to produce disagreeable secondary effects than other antipyretics; and comparatively large doses may be administered without injury.

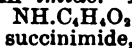
The substance itself has been known to chemists for a long time, but its physiological properties have only recently been discovered by accident. It is prepared by heating aniline and



When two atoms of hydrogen are replaced, we may distinguish several cases:

1. Either the two atoms are replaced by two monatomic or univalent radicals. In this case, the name of the product is likewise made to end in *-amide*. For instance, di-acet-amide ($\text{NH}_2.\text{C}_6\text{H}_4\text{O}$); or ethyl-acetamide ($\text{NH}_2.\text{C}_6\text{H}_4.\text{C}_2\text{H}_5\text{O}$), etc., etc.

2. Or two atoms of hydrogen are replaced by one diatomic radical, in which case the name of the product is made to end in *-imide*. For instance:



succinimide,

the radical $\text{C}_6\text{H}_4\text{O}_2$ being bivalent.

The substance which interests us here is *phenylacetamide*, which evidently belongs to the first of these two groups, for each of the two hydrogens is replaced by a monatomic radical: C_6H_5 is phenyl, derived from $\text{C}_6\text{H}_5\text{OH}$ or phenol. And $\text{C}_2\text{H}_5\text{O}$ is a monatomic radical, derived from $\text{C}_2\text{H}_5\text{O}_2$, or acetic acid. Hence,



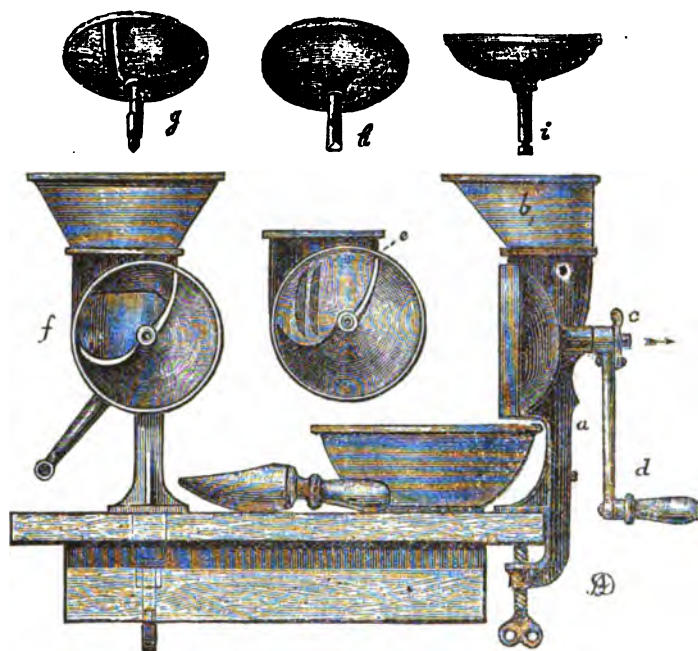
Antifebrin is a neutral substance, not acted upon by sulphuric or hydrochloric acids, and not affected by alkalis, except when they are very concentrated. Having neither basic nor acid properties, there can be no salts of which it may form a part, as is the case with most of the other recent antipyretics.

The wholesale price of the substance is about \$4 per pound in Germany.

The results of the investigation of the therapeutic properties of antifebrin, by Drs. Cahn and Hepp, are thus summarized in the *Lancet*:

They gave it in considerable doses to rabbits and dogs, and, finding it entirely free from deleterious effects, they administered it to twenty-four patients with fever, eight having typhoid, five erysipelas, four phthisis, two articular rheumatism, etc. The doses given were from 4 to 15 grains, as

much as 30 grains being given during the day. The dose required varied with the case. Generally speaking, it was found that it produced about as much effect as four times the same quantity of antipyrin. So far, the writers have never seen any case in which antifebrin failed to lower the temperature. The effect began to show itself in about an hour, attaining its maximum in four hours, and ceasing to produce any diminution in from three to ten hours more. A dose which was strong enough to reduce the temperature to normal usually kept it so for from six to eight hours. The fall of temperature was generally accompanied by a redness of the skin and increased perspiration. The subsequent rise was not accompanied by cold sweats, though sometimes the patients complained of feeling cold. The pulse diminished in frequency *pari passu* with the fall in temperature. No disturbance of the digestive organs was ever observed. Sometimes, indeed, the appetite returned whilst the temperature was low. Occasionally there was thirst and an increased excretion of urine. In some cases, too, there was a blueness of the face and extremities. In one case of acute rheumatism the pain in the joints and the fever disappeared rapidly after commencing antifebrin.

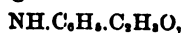


Obermeyer's comminuting machine.

glacial acetic acid in a flask provided with an upright condenser for forty-eight hours, and then distilling, when the acetanilide is obtained in an impure state, and may then be purified by crystallization from benzol or boiling water.

When pure, "antifebrin" is a white, crystalline powder, without odor, imparting a slight burning sensation to the tongue, and melts at 101°C . (according to Gerhardt, at 112°C). It is soluble in 189 parts of cold water (at $6^\circ \text{C} = 42.8^\circ \text{F}$), more readily soluble in ether and in alcohol. From its alcoholic solution it is not precipitated by water. It is also soluble in benzol, benzol, and essential oils.

Acetanilide or phenylacetamide has the following chemical constitution:



which may be briefly explained as follows:

Ammonia has the composition NH_3 , or NHHH . Each of these three atoms of hydrogen may be replaced by some other substance of like atomicity, such as an alcohol-radical or an acid-radical.

When only one atom of hydrogen is thus replaced—in which case the substitute must be a monatomic radical—the result is a so-called *primary amide*. For instance, acetamide is formed thus:

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EDITORIAL.

The "National Formulary."

As will be seen from the report of the late meeting of the American Pharmaceutical Association, held at Providence, September 7th-9th, 1886, the report and recommendations of the Committee on National Formulary were accepted and approved, and the preliminary draft, which was submitted, was ordered to be printed so as to be available for criticism and improvement during the coming year. No one is more conscious of its imperfections and inconsistencies than the committee itself. The writer of this being one of the members, considers himself authorized to make this statement. Yet there is ample time, if proper assistance is rendered, to make it more perfect and complete. It may be assumed that more fault will be found with it for the omission of a large number of preparations, than for the admission of those contained in it. There are, no doubt, some among the latter which, on further examination, will be found undeserving of a place in the work. The omissions, on the other hand, can be best amended by contribution of titles and of working formulæ from the different sections of the country. The Committee on the National Formulary has been reconstructed so as to embrace, besides the present five members residing in New York and Brooklyn, one representative of each State Pharmaceutical Association, to be appointed by the President. These members, who might, for brevity's sake, be called *non-resident* members, when appointed, will be informed of the days and time of the meetings of the committee, and, if they can attend the sessions in person, will be able to cast their vote on any proposition. It is hoped that as many as can make it convenient will appear at the meetings. At all events, it will be their function to represent and act

for the committee within their respective States.

The plan first adopted and carried out by the American Pharmaceutical Association, of preparing and issuing under its own auspices a National Formulary of Unofficial Preparations, has found so much favor abroad that the British Pharmaceutical Conference has already imitated the example and decided to elaborate a formulary on a similar plan. To British pharmacists such an undertaking must appear particularly valuable, useful, and also attractive, as it appears to be the only way in which the pharmaceutical talent of Great Britain—disdainfully treated by the Medical Council in the revision of the British Pharmacopœia—can prove its competency and right to be entrusted with the elaboration of practical formulæ which will stand the test of time and experience. The discussion on this subject—a report of which has just reached us in our English exchanges—shows that this movement has been entered upon with great vigor and enthusiasm, and with a full recognition of its importance. The committee which has been appointed for the execution of the work consists of Messrs. Greenish, Groves, Martindale, Dr. Symes, Dr. Thresh, H. Martin, H. W. Naylor, Maben, Abraham, and Reynolds. It appears that the committee has not yet arrived at a definite and practical decision regarding the kind of formulas to be embraced in the work. It seems to be understood, however, that the committee shall include in their formulary any new drugs and preparations which may come into use, with definitions or tests of identity and purity. For the present, the American Committee has not contemplated to extend the scope of its Formulary in this direction, though at a subsequent period such a step may be considered advisable. It is true that it is quite desirable to possess a definite standard for the identity and purity of unofficial crude drugs and chemicals—for instance, for resorcin, antipyrin, naphthalin, naphthol, sodio-salicylate of caffeine, *Franciscia uniflora* (Manaca), *Piscidia erythrina*, etc., etc.—yet the preparation of the corresponding text to accompany each of these articles will require more time than is at the disposal of the committee for the ensuing year. And as there exists, really, a more pressing necessity for rendering uniform the heterogeneous and motley host of "elegant" and other preparations, of which the pharmacist is compelled to keep in stock a number of brands to satisfy the popular demand—much to his annoyance and financial loss—it is preferable to devote attention to this portion of the work for the present.

The Preliminary Draft for a National Formulary which has been handed in at the Providence meeting, is now being printed, and a sufficient number of copies will be available for distribution to those who intend to co-operate in the work. In order to show the character of the collection, so far as the Committee have been able to perfect it, we publish, elsewhere in this number, a selection of formulæ, preferably of such as present specimens of various preparations, and are perhaps less likely to be remodelled than others.

AFTER reading the propositions submitted to the American Pharmaceutical Association by its special committee on a National Formulary and adopted at the meeting in Providence, one might very naturally inquire whether there is any real necessity for such a work independently of the Pharmacopœia. If the demand for such articles as are referred to in the detailed report of the committee is sufficiently great to justify national

action and co-operation, in order to secure uniformity of products, it would seem that such articles should be included among those for the preparation of which the Pharmacopœia is intended.

Take, for example, the elixirs as an illustration. This class of articles embraces now so many varieties that it constitutes an important part of a pharmacist's stock in trade. Multitudes of physicians prescribe them, and quite as many, we venture to say, are sold without a physician's prescription. A strong effort was made to include certain of them in the Pharmacopœia, but was defeated, although pharmacists were in the majority on the Committee of Revision. Now we have the remarkable action on the part of the pharmacists, of undertaking the publication of an authoritative work, also of national scope, in which it is proposed that these very articles should receive a large share of attention. If elixirs are of sufficient importance to warrant consideration in one national work, why should they not also be recognized in the other?

We do not wish it to be understood that we are in any degree opposed to the work of this special committee. On the contrary, we believe that there can be but little doubt that the labors of the special committee will prepare the way for such a change in the Pharmacopœia and will, by just so much, lessen the labors of the future Committee of Revision.

THE *Manufacturer's Gazette* says: "Long experience has shown that it is possible to drink adulterated beer and coffee, and to consume sand-sugar and miscellaneous sausages without immediate peril to life. We cannot, however, afford to permit our drugs to be tampered with. Let us insist upon being supplied with pure strychnine and arsenic, and with medicines that will not disappoint the just expectations of undertakers and create in their minds a prejudice against young physicians just beginning their career. We need less poison in our food and more poison in our drugs. The druggist must not fancy that the surreptitious medicine supplied to us by grocers can be made an excuse for the adulteration of drugs with harmless groceries. Let us have everything in its proper place, groceries at the grocer's and poison at the druggist's. The efforts of druggists and grocers, quietly to exchange their respective trades without permitting the public to be made aware of the fact, should be resolutely opposed."

IN a recent examination, in Iowa, of a candidate for license to practise medicine, he was asked if he had ever attended any case of labor; he replied that he never did a day's work. (His wife said that he had always been lazy, but that, during the summer, he had pitched three loads of hay.) He was then asked if he had ever had any cases of obstetrics in the past year, and replied that he had not. He was then asked if he knew of any case of obstetrics occurring in his neighborhood during the past fifteen years, and he replied, after deep thought, that he did not.

A BRITISH practitioner, under the title of "F. R. C. S.," sends to the *Provincial Medical Journal* a list of a hundred medical books, with which he considers a junior practitioner would be armed for any emergency, and that in the list, "NEW REMEDIES" (the former title of this journal) appears. We appreciate the compliment.

Crystallized Cocaine.—We have been favored with specimens of crystallized cocaine and its hydrochlorate by Dr. Kerner, the well-known quinologist and manager of Zimmer's quinine works at Frankfurt on the Main. These crystals are of a remarkable size and beauty, some of them being nearly an inch long, not merely needles, but stout well-formed crystals.

College of Pharmacy of the City of New York.—The attendance at this College during the present winter session is larger than in any previous year. The Junior class of 1885-'86 numbered 130. This year it numbers, so far, 186. There are 106 students in the Senior class, and 8 special students. The new pharmaceutical laboratory was completed in time for the course, and proves to be an important new feature. It is the intention of the trustees to provide such other facilities as will be found necessary or desirable.

We are indebted to Mr. E. C. Maxey, of Fargo, the Treasurer of the Dakota Pharmaceutical Association, for the information that, owing to the distances between points in the northern and southern portions of the territory being so great, chapter II., art. 2, of the constitution of that organization has been suspended for ninety days. All proprietors of drug-stores and clerks having three successive years' experience, will be admitted to the Association on signing the constitution and paying the fees.

Alviso B. Stevens, Ph.C., has been appointed as Lecturer on pharmacy at the School of Pharmacy of the University of Michigan, following the resignation of Assistant Professor Wrampelmeier. Mr. Stevens is well known as a pharmacist at 33 Lafayette avenue, Detroit. He graduated in pharmacy at Ann Arbor in 1875; was president of the Detroit Pharmaceutical Association for several years after its organization; and is an officer in the Michigan State Association.

Numbers on New York Avenues.

HERE is something from the N. Y. *Tribune* which will enable the corner druggist to answer a few, at least, of the numerous conundrums submitted to him in the course of his daily experience.

To find the number of the street nearest to any given house number on an avenue: Cut off the last figure from the number of the house, divide the remainder by 2, and then, for

Ave. D, add 3.

Ave. C, below 200, add 2; above 200, add 3.

Ave. B, below 200, add 2; above 200, add 3.

Ave. A, below 250, add 3; above 250, add 4.

First ave., below 200, add 2; between 200 and 600, add 4; above 600, add 5.

Second ave., below 200, add 2; above 200, add 3.

Third ave., below 400, add 8; between 400 and 800, add 9; above 800, add 10.

Lexington ave., add 22.

Fourth ave., below 200, add 6; above 200, add 8.

Madison ave., add 26.

Fifth ave., below 200, add 13; above 200, add 16.

Sixth ave., below 400, add 4; between 400 and 800, add 5; above 800, add 6.

Seventh ave., below 650, add 12; above 650, add 13.

Eighth ave., below 600, add 10; above 600, add 9.

Ninth ave., below 200, add 12; above 200, add 13.

Tenth ave., below 200, add 12; above 200, add 13.

Eleventh ave., below 600, add 14; above 600, add 15.

If you know the cross street and wish to know about what the number on an adjoining avenue will be, deduct the number for the avenue, double the remainder, and affix 5.

Correction.—In the paper of Mr. L. Eliel, on "Paste for Labels" in our last number, page 186, the last formula at the bottom of the third column should read:

Rye Flour.....4 oz.
Powd. Alum..... $\frac{1}{2}$ oz.

An Informal Meeting of the secretaries of State Pharmaceutical Associations, who were present at the Providence meeting, is likely to result in a more permanent organization.

Chicago Drug Clerks have organized a society with Wm. McDoughl, president; E. Neuschafer and C. Benkler, vice-presidents; E. C. Scholer, secretary; O. J. Harwig, treasurer.

The Pharmaceutical department of the University of Buffalo, N. Y., opened the present session with a class of thirty students.

The Commissioners of Pharmacy of Iowa are actively engaged in ridding the State of persons who sell liquor under the guise of practising pharmacy.

The Department of Pharmacy of Kansas State University opened with a class of thirty students this year.

Dr. Jirus, of Agram, has been selected for the Chair of Pharmacology in the Bohemian Faculty of Medicine in Prague.

The St. Louis College of Pharmacy commenced its twenty-first session on the 11th of October, with over 130 students. The chemical, microscopical and pharmaceutical laboratories have larger classes than ever before; and all indications point towards a very successful college year.

Law against Adulteration.—The Vermont Legislature, at its last session, passed a law prohibiting the adulteration of maple-sugar or honey, and imposing a fine of twenty-five to fifty dollars for its infringement.

A New Experimental Station at the sea-shore has been lately established by the Spanish Government for experimental zoology and botany.

American Goods in Foreign Markets.—The London *Daily Telegraph* is publishing an extensive correspondence upon the commerce of Great Britain and its colonies, in the course of which an Australian writes:

"At the Melbourne Club, one evening, an eminent medical man told me that the surgical instruments with which he was supplied from England were utterly useless to him, and that he was obliged to send to New York for instruments that were really serviceable. Another, and more unseemly device practised at home, is to send out boxes and cases and bottles of lozenges, pills, and jujubes only three-quarters filled."

In an interview with Mr. Alfred Felton, of the Australian firm of Felton, Grimwalde & Co., of Melbourne, by a representative of the *British and Colonial Druggist*, the reporter remarked that "in the matter of the sale of pharmaceutical preparations in the colonies, it is sometimes said that America is getting ahead of us," to which Mr. Felton replied:

"Well, at the Antipodes, there is an equal field for all comers, such as it is. There is a preference for English

goods, and England, at present, undoubtedly has the market. Not only English and American pharmaceutical specialties, but German and French also have been introduced into Australia. Some of them succeed on their merits, and others, owing to the way in which they are advertised. Now, our American friends are great in this latter department, and this, in conjunction with the admirable way they get their goods up, materially assists them in obtaining a very good position with the public. The English producers, therefore, although they command the market, now will have to bestir themselves, and use all their intelligence to thoroughly adapt their goods to the colonial requirements, or they will lose ground."

"Patent" Medicines in Great Britain.—Twenty years ago, 11,520 venders of patent medicines were doing business in Great Britain, and 7,500,000 stamp labels were issued. In 1855 the number of venders had increased to 20,279, and the number of labels to 21,500,000. The revenue derived by the government from the latter source is estimated at \$600,000 per year.

A NEW INTERPRETATION OF "M.D."—*The Southern California Practitioner* is responsible for the story of a doctor who gave up his profession on account of ill health, and went into the milk business. He printed his cards "J. B. Johnson, M.D. (which means milk distributor)." He recovered.

Artificial Tape-Worms.—A writer in the *Southern California Practitioner* says that the people from the country around Los Angeles go to that city for treatment for tape-worm, and return with yards of tænia in bottles. The worms, he admits, are very pretty, and, perhaps, worth all they cost, for they are made of celluloid.

Effect of Tincture of Iron on the Teeth.

DR. GEO. W. WELD has shown by experiments that tincture of the chloride of iron, of official strength, has but little, if any, effect upon dental enamel during immersion for twelve hours, but when immersed in a mixture of a drachm of the tincture with an ounce of water, the enamel was materially injured in five minutes, and at the end of twenty-four hours the enamel was completely destroyed. When a mixture of a drachm of the tincture of the chloride of iron with an ounce of alcohol was employed, no injury to the enamel followed immersion for twelve hours. A drachm of the tincture mixed with an ounce of elixir of pyrophosphate of iron produced no apparent chemical effect upon enamel after the lapse of twenty-four hours.

In a mixture of a drachm of the tincture with an ounce of simple syrup, enamel was but slightly affected.

"Horsford's Acid Phosphate," and "Phos-acid" destroyed the enamel of a tooth in an hour, while "Phosphomuriate of Quinine Comp.," a syrupy solution (each drachm containing two grains of free phosphoric acid) produced but little, if any effect on enamel during twenty-four hours.

The destructive effect of the tincture of the chloride is, to a great extent, modified in a mixture of a drachm with an ounce of Vichy water, owing to the neutralizing effect of the sodium bicarbonate upon the free acid of the tincture.

Dr. Weld advises that, in the use of tincture of chloride of iron, one or the other of the following vehicles should be employed: Alcohol, in some form, Vichy water, some form of elixir, or simple syrup.—*Med. News*, after *Amer. Jour. of Dental Science*.

SELECTED FORMULAS FROM THE PRELIMINARY DRAFT OF A NATIONAL FORMULARY.*

Ceratum Camphoræ Compositum (Ceratum Camphoratum). Camphor Ice.

Camphor..... 8 parts
Benzoinated Lard.....15 "
White Wax.....10 "
Spermaceti..... 4 "
Alcohol..... a sufficient quantity.

Triturate the Camphor with a sufficient quantity of Alcohol to dissolve it. Then, having melted the White Wax and Spermaceti, on a water-bath, gradually add the solution of camphor, and continue stirring until the Alcohol has evaporated. Then withdraw the heat and having stirred the mixture occasionally until it has somewhat cooled, mix it, while still liquid, intimately with the Benzoinated Lard (which should have been prepared from purified and washed lard), and pour it into suitable moulds.

Elixir Aromaticum. Aromatic Elixir.

Aromatic Spirit.....16 fluidounces.
Syrup.....24 "
Water.....24 "
Phosphate of Calcium..... 4 av. ounce.

Mix the liquids, adding the Water last; then mix thoroughly with the Phosphate of Calcium, and filter through a well-wetted filter, returning the first portions of the filtrate until it runs through clear.

Note.—The specific gravity of Aromatic Elixir is 1.100. This Elixir should not be mixed with preparations of Iron, unless the Aromatic Spirit contained in it, is prepared from the essential oils.

If it is desired to impart to this Elixir a red color, this may be effected by the addition of 2 fluidrachms of Tincture of Cudbear (No. 78) to each Pint. [Improved Formula of N. Y. and B. F.]

[The title "Simple Elixir" heretofore used has been changed to "Aromatic Elixir," so as not to bring about confusion with the official Elixir of Orange.]

Elixir Chloral et Potassii Bromidi Compositum. Compound Elixir of Choral with Bromide of Potassium.

Chloral..... 4 troy oz.
Bromide of Potassium..... 4
Extract of Cannabis Indica..... 16 grains.
Extract of Hyoscyamus..... 16 "
Water..... enough to make 16 fl. oz.

Dissolve the Bromide of Potassium in 8 fl. oz. of boiling water, then add the Chloral. Add the Extracts to 4 fl. oz. of boiling Water, and when they are dissolved or uniformly distributed through the liquid, add the latter to the solution of the salts. Allow to stand two days, filter, and add Water, if necessary, to make the product measure 16 fluid oz. [Illinois.]

Elixir Ferri Phosphatis, Quininae et Strychninae. Elixir of Phosphate of Iron, Quinine, and Strychnine.

Phosphate of Iron (U. S. Ph.
1880).....256 grains.
Hydrochlorate of Quinine.....128 "
Sulphate of Strychnine..... 1 1/2 "
Aromatic Spirit (No. 66)..... 6 fluidounces.
Water..... 4 "
Syrup..... 6 "
Simple Elixir (No. 46),
enough to make..... 16 "

Dissolve the Sulphate of Strychnine in the Aromatic Spirit, contained in a flask, add the Sulphate of Quinine, place the flask into hot water, and shake it well occasionally. Dissolve the Phosphate of Iron in four

(4) fluidounces of hot Water, in a capsule; add the Syrup, and heat nearly to the boiling point. Then pour into this hot mixture, all at once, the hot solution of the alkaloids, and shake well immediately. When cold, add enough Simple Elixir to make sixteen (16) fluidounces, allow to stand for twenty-four hours, and filter.

Each fluidrachm contains 2 grains of Phosphate of Iron, 1 grain of Hydrochlorate of Quinine, and 1/16 grain of Sulphate of Strychnine. [Improved Formula of N. Y. & B. F.—Illinois.]

Elixir Ferri, Quininae et Strychninae. Elixir of Iron, Quinine, and Strychnine.

Tincture of Citro-Chloride of Iron.....1 fl. oz.
Hydrochlorate of Quinine.....96 grains.
Sulphate of Strychnine..... 1 1/2 "
Citrate of Potassium..... 60 "
Aromatic Elixir, enough to make 16 fl. oz.

Dissolve the Hydrochlorate of Quinine and the Sulphate of Strychnine in 12 fl. oz. of the Aromatic Elixir. Then add the Tincture, and afterwards the Citrate of Potassium, so that any precipitate, that may have formed, will be redissolved. Lastly, add enough Aromatic Elixir to make 16 fl. oz.

Elixir Gentianæ Compositum. Compound Elixir of Gentian.

Gentian.....256 grains.
Coriander..... 60 "
Bitter-Orange Peel..... 60 "
Alcohol..... 5 fl. oz.
Water..... 9 "
Sugar..... 4 1/2 troy oz.
Aromatic Spirit..... 1 fl. oz.
Egg Albumen.....120 grains.
Citric Acid..... 5 "

Mix the Alcohol and Water, and percolate the Gentian, Coriander, and Bitter-Orange Peel, previously reduced to a moderately fine powder, with this menstruum, until 13 fl. oz. of percolate are obtained. To this add the Albumen and Citric Acid, and filter. Finally, add the Aromatic Spirit and filter again. [District of Columbia.]

Elixir Guaiaci. Elixir of Guaiac.

Tincture of Guaiac, U. S. Ph..... 1 fl. oz.
Carbonate of Potassium..... 5 grs.
Glycerin..... 1 fl. oz.
Compound Elixir of Taraxacum..... 1 "
Syrup..... 1 "
Water.....30 min.

Mix the Tincture of Guaiac with the Carbonate of Potassium previously dissolved in 1/2 fluidrachm of Water, then add the other ingredients, in the order named, shaking after each addition.

Elixir Hypophosphitum Compositum. Compound Elixir of Hypophosphites.

Hypophosphite of Calcium.....128 grs.
" " Sodium.....128 "
" " Potassium..... 64 "
Solution of Hypophosphite of Iron.....884 min.
Water..... 4 fl. oz.
Syrup..... 4 "
Aromatic Elixir, enough to make 16 "

Dissolve the solid Hypophosphites in the Water, add the Solution of Hypophosphite of Iron and the Syrup, and, finally, enough Aromatic Elixir, to make 16 fl. oz., and filter.

Each fluidrachm contains 1 grain, each, of Hypophosphite of Calcium and Sodium, and 1/4 grain, each, of Hypophosphite of Potassium and Iron.

Elixir Pepsini. Elixir of Pepsin.

Pepsin, undiluted.....128 grs.
Lactic Acid..... 80 min.
Syrup..... 6 fl. oz.
Alcohol..... 4 "
Compound Elixir of Taraxacum..... 1 "
Water, enough to make..... 16 "

Agitate the Pepsin with three (3)

fluidounces of Water and the Lactic Acid, until it is dissolved. Then add the Syrup, Compound Elixir of Taraxacum, and the Alcohol, and finally enough Water to make sixteen (16) fluidounces.

Each fluidrachm contains 1 grain of undiluted Pepsin.

Note.—It is recommended that those commercial kinds of undiluted pepsins be selected which have been ascertained from time to time to be the most active and least affected with disagreeable odor or taste. Should any particular kind of pepsin be found to possess strong digestive powers, compared with equal quantities of other kinds, while it is found to leave a comparatively large residue insoluble in acidulated water, it should be remembered that all the active portion goes into solution, and the undissolved residue may in each case be rejected as inert. (The Lactic Acid ought probably to be replaced by Hydrochloric.)

Elixir Phosphori et Nucis Vomicae. Elixir of Phosphorus and Nux Vomica.

Tincture of Nux Vomica.....384 min.
Elixir of Phosphorus [N. Y. & B. F.], enough to make..... 16 fl. oz.

Mix them.

Each fluidrachm contains 3 minims of Tincture of Nux Vomica and nearly 1/16 grain of Phosphorus.

Elixir Rhei. Elixir of Rhubarb.

Sweet Tincture of Rhubarb, U. S.....8 fl. oz.
Deodorized Alcohol.....1 "
Water......8 "
Glycerin......2 "
Syrup......2 "

Mix the Alcohol, Water, Glycerin, and Syrup. Add this solution gradually and with frequent agitation to the Tincture.

Iodoformum Aromatisatum. Aromatized Iodoform (Deodorized Iodoform).

Iodoform.....25 parts.
Cumarin..... 1 part.

Mix them intimately.

Note.—Many essential oils, such as those of peppermint, cloves, cinnamon, citronella, bergamot, sassafras, eucalyptus (also eucalyptol), etc., may be used for masking the odor of iodoform. But none of them appear to be as effectual or lasting as cumarin. When iodoform has come in contact with the hands, the odor may be most readily removed by washing them with a little aqueous solution of tannic acid.

Lac Fermentatum. Kumys.

Cow's Milk, fresh.....32 fl. oz.
Yeast, semi-liquid..... 1 fl. dr.
Sugar..... 1 troy oz.

Dissolve the Sugar and Yeast in the Milk contained in a small bottle, and keep the mixture at a temperature of 75° to 90° F. for six hours, then transfer it to a cold place.

Linimentum Saponato-Camphoratum. Opodeldoc.

Castile Soap, in powder..... 1 1/2 troy oz.
Camphor..... 1 "
Alcohol.....20 fl. oz.
Oil of Thyme.....30 min.
" Rosemary.....60 "
Stronger Water of Ammonia..... 1 fl. oz.

Introduce the Soap, Camphor, and Alcohol into a flask or suitable bottle, and apply a gentle heat until solution is effected. Filter the liquid, while hot, into another flask or bottle; then add the other ingredients; warm until the contents are again liquefied and uniformly mixed. Then pour into small

* From Report of Committee on National Formulary, presented at the Providence meeting of the Amer. Pharm. Assoc.—In preparing this Report for the press, all the formulæ published in other formulæ, so far as they were officially brought to the notice of the Committee, have been added.

vials, which should immediately be corked and cooled.

Note.—The above given quantities should be divided among twelve vials. Solid Opodeldoc is usually made with soap made from animal fats; but Castile Soap may be used, provided it be previously deprived of water.

Linimentum Ammonii Iodidi. Liniment of Iodide of Ammonium.

Iodine.....	80 grs.
Oil of Rosemary.....	120 min.
" " Lavender.....	120 "
Camphor.....	240 grs.
Water of Ammonia.....	2 fl. oz.
Alcohol.....	16 "

Dissolve the Iodine in the Alcohol, then add the Oils and Camphor. When they are dissolved, add the Water of Ammonia.

Linimentum Opii Compositum. Compound Opium Liniment. Canada Liniment.

Tincture of Opium.....	1 fl. oz.
Spirit of Camphor.....	1 "
Oil of Peppermint.....	1 "
Water of Ammonia.....	1 "
Oil of Turpentine.....	4 "

Dissolve the Oil of Peppermint in the Alcohol, then add the Spirit of Camphor, Oil of Turpentine, Tincture of Opium, and Water of Ammonia.

Note.—The mixture will separate on standing, and must be shaken up before it is used.

Liquor Ferri Iodidi. Solution of Iodide of Iron (Ferrous).

Iodine.....	2,574 grs.
Iron Wire.....	2 av. oz.
Hypophosphorous Acid (50%).....	8 fl. dr.
Distilled Water, enough to make.....	8 fl. oz.

Mix the Iron Wire with 6 fl. oz. of Distilled Water, in a flask, add about one-half of the Iodine, and agitate continuously until the liquid becomes hot. Then moderate the reaction by placing the flask in cold water, or allowing cold water to flow over it, meanwhile keeping up the agitation. When the reaction has moderated, add one-half of the remaining Iodine at a time, and again carefully moderate the reaction; each time in the manner above directed. Finally, raise the contents of the flask to boiling, and filter immediately through moistened pure filtering paper (the point of which is best supported by a loose pellet of absorbent cotton) into a bottle containing the Hypophosphorous Acid. When all the liquid has passed, rinse the flask with $\frac{1}{2}$ fl. oz. of boiling Distilled Water, and pass this through the filter. Cork the bottle and set it aside to cool. Finally, add enough Distilled Water to make the product measure 8 fluidounces.

On mixing 1 vol. of this Solution with 5 volumes of Syrup, the product will be practically identical, measure for measure (not weight for weight), with the official Syrupus Ferri Iodidi.

Liquor Pepsini Aromaticus. Aromatic Solution of Pepsin. Aromatic Liquid Pepsin.

Saccharated Pepsin.....	320 grs.
Oil of Cinnamon.....	2 min.
Oil of Pimenta.....	2 "
Oil of Cloves.....	4 "
Alcohol.....	$\frac{1}{2}$ fl. oz.
Hydrochloric Acid.....	75 min.
Glycerin.....	6 fl. oz.
Water, enough to make.....	16 "

Dissolve the Oils in the Alcohol; mix the solution intimately with the Pepsin, by trituration in a mortar, then gradually add the Acid, Glycerin, and Water.

Each teaspoonful contain $2\frac{1}{2}$ grs. of Saccharated Pepsin.

Liquor Pepsini Concentratus. Concentrated Liquid Pepsin.

Saccharated Pepsin.....	1 troy oz.
Hydrochloric Acid.....	1 fl. dr.
Glycerin.....	6 fl. oz.
Distilled Water.....	10 "

Triturate the Saccharated Pepsin with the Hydrochloric Acid, previously diluted with 1 fluidounce of the Water, add the remainder of the Water, and allow to stand, with occasional agitation, for 24 hours. Then add the Glycerin, mix well and filter.—[Kentucky.]

Liquor Sodii Boratis Compositus. Compound Solution of Borate of Sodium. Dobell's Solution.

Sodium Borate.....	60 grs.
Carbonic Acid.....	12 grs.
Glycerin.....	2 fl. drs.
Sodium Bicarbonate.....	60 grs.
Water, warm.....	8 fl. oz.

Dissolve and mix.

Note.—Dr. Dobell states that in certain cases the borate of sodium may be advantageously replaced by chloride of ammonium, chloride of potassium, or Condy's fluid.

Mistura Balsamica. Balsamic Mixture. Mistura Oleoso-Balsamica, Ph. Ger. Balsamum Vitæ Hoffmanni. Hoffmann's Balsam of Life.

Oil of Lavender.....	30 min.
" Cloves.....	25 "
" Cinnamon.....	25 "
" Thyme.....	30 "
" Lemon.....	30 "
" Mace.....	30 "
" Orange Flowers.....	30 "
Balsam of Peru.....	70 "
Alcohol, enough to make.....	16 fl. oz.

Mix and dissolve.

Mistura Carminativa. Carminative Mixture. Dalby's Carminative.

Carbonate of Magnesium.....	$1\frac{1}{2}$ troy oz.
Carbonate of Potassium.....	24 grs.
Sugar.....	$8\frac{1}{2}$ troy oz.
Tincture of Opium (U. S. Ph. 1880).....	200 min.
Oil of Caraway.....	2 "
" Fennel.....	2 "
" Peppermint.....	2 "
Water.....	16 fl. oz.

Triturate the Oils with about 1 drachm of the Carbonate of Magnesium, and the Water gradually added. Introduce the liquid into a bottle, add the remainder of the Carbonate of Magnesium and the other ingredients, and shake until the Sugar is dissolved.

This preparation should be freshly made when required, and should be shaken before being dispensed.

Each fluidounce represents about 1 grain of opium.

Mistura Copaibæ Composita. Compound Copaiba Mixture. Lafayette Mixture.

Copaiba.....	2 fl. oz.
Spirit of Nitrous Ether.....	2 "
Compound Spirit of Lavender.....	2 "
Solution of Potassa.....	4 fl. dr.
Syrup.....	5 fl. oz.
Mucilage of Acacia, enough to make.....	16 "

Mix the Copaiba first with the Solution of Potassa, then add the Spirit of Nitrous Ether and the Compound Spirit of Lavender. Mix the liquid with the Syrup, and finally with enough Mucilage, under active stirring, to make 16 fluidounces.

The mixture should be well shaken before it is dispensed.

Misturæ contra Diarrhœam. Diarrhœa [or Cholera] Mixtures.

1. Sun Mixture.

Tincture of Opium.....	1 fl. oz.
" " Capsicum.....	1 "
" " Rhubarb.....	1 "
Spirit of Peppermint.....	1 "
" " Camphor.....	1 "

Mix.

2. Velpeau's Diarrhœa Mixture.

Tincture of Opium.....	1 fl. oz.
" " Catechu.....	1 "
Spirit of Camphor.....	1 "

Mix.

3. Hamlin's Cholera Remedy.

I. Tincture of Opium.....	1 fl. oz.
" " Rhubarb.....	1 "
Spirit of Camphor.....	1 "

Mix.

Note.—This is directed to be used in the first stage. When vomiting occurs, and collapse threatens, the following is directed to be used:

II. Tincture of Opium.....	1 fl. oz.
" " Cardamom.....	1 "
" " Ginger.....	1 "
" " Capsicum.....	1 "

Mix.

4. Squibb's Diarrhœa Mixture.

Tincture of Opium.....	1 fl. oz.
" " Capsicum.....	1 "
Spirit of Camphor.....	1 "
Purified Chloroform.....	3 fl. dr.
Alcohol, enough to make.....	5 fl. oz.

Mix.

5. Loomis' Diarrhœa Mixture.

Tincture of Opium.....	4 fl. dr.
" " Rhubarb.....	4 fl. dr.
Compound Tincture of Lavender.....	2 fl. oz.
Oil of Sassafras.....	40 drops.

Mix.

Note.—The directions given are: "Take a fluidrachm after each movement. Should the above mixture fail to act, add to it 1 fl. oz. of Tincture of Catechu."

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Acetico-Tartrate of Aluminium—in 50 per cent solution, has been on the market for some time, and is used, when properly diluted, as a gargle or local application in diphtheritic or other diseases of the mucous membrane of the nose or throat.

Aethoxy-Caffeine.—See this article under *caffeine*.

Antifebrin—[on which an article elsewhere in this number should be consulted] is reported to be four times as energetic in its action as antipyrin. And as it costs only about half as much as quinine, it is likely to become a dangerous rival of the latter.

Antipyrin.—The hæmostatic properties of this antipyretic drug have been reported on some time ago. Dr. Casati prefers antipyrin to ferric chloride and other hæmostatic remedies, as it leaves the wound entirely clean, and has this advantage (particularly over ergotin) that it is not poisonous even in large doses.

Aseptic Acid—an article of commerce which should not be confounded with aseptol (which is a compound of phenol with the sulphuric acid radical), is said to consist of a solution of

Borax..... 5 parts.
in Peroxide of Hydrogen 32.95 "

Aseptol.—A new name, viz., *sozolic acid*, has recently been proposed for this antiseptic [first proposed by Annessens, of Antwerp; compare the preceding paragraph].

Atropine.—The demands for this alkaloid have been so great that the supply (as prepared by Gehe & Co.) could not always keep pace therewith. The price of the alkaloid is likely to advance.

Balsam of Peru.—Gehe & Co. express the wish that the importers in Hamburg and Bremen should allow the balsam, after arrival, to clarify by standing, whereby the lighter impurities will rise to the top and the heavier ones will subside. The London importers have long been accustomed to follow this practice.

Balsam of Copaiba.—Para balsam has become comparatively scarce and is almost dearer than Maracaibo.

* From Gehe & Co.'s "Handelsbericht" for September, 1886.

Berberine—is still in demand by southern countries. It has only recently been recommended by Arzela as a remedy in recent and chronic malaria, in doses of 1 gramme daily.

Bismuth—has remained very steady in price. Occasional offers below the normal price appear to be due to odd lots of the metal put on the market by small Bohemian mining firms.

Caffeine.—The series of medicinally useful derivatives of caffeine has been increased by the addition of *æthoxy-caffeine*. This is obtained by treating brom-caffeine with alcoholic potassa. It has been found by Dujardin-Beaumetz to be a mild narcotic and sedative, and to render good services especially in migraine, in doses much smaller than those of caffeine.

Caffeine Citrate.—The new British Pharmacopœia directs this compound to be prepared by dissolving equal parts of caffeine and citric acid in water, evaporating to dryness, and powdering the residue. Though the product is, of course, only a mechanical mixture, yet it has the advantage of dissolving to a clear liquid, and to be of a constant composition. Heretofore it had been customary to dissolve caffeine in water with the aid of a sufficient amount of citric acid, and to allow the solution to crystallize, when the largest portion of the acid remained in solution, and the crystals retained at most 5 per cent of it mechanically.

Camphor.—It is reported that the Japanese government has given permission to fell camphor trees in certain districts heretofore untouched. This will probably tend to prevent a material advance in price. Regarding the production of camphor on Formosa, the information is uncertain.

Cinchona Bark.—In the beginning of 1885, the value of bark, in the London market, was 6 to 8 pence per unit, [the "unit" is the amount of quinine found in 70 grains of bark; see this Journal, 1885, p. 157]. Since then it has gradually but steadily fallen, until it reached, at the end of August, 1886, the low value of 3 to 3½ pence. The cause of this is, of course, the enormous increase of shipments of bark from Ceylon, which were as follows:

October 1st to June 30th.	pounds.
1885-1886	12,336,599
1884-1885	8,390,317
1883-1884	6,998,018
1882-1883	4,834,507
1881-1882	1,641,346

The great increase since October, 1885, has created a perfect panic among manufacturers. Every possible explanation was offered to impress the trade with the belief that this increase could not last. So it was reported that the amount of bark now available in Ceylon is only about one-fourth of what it was four years ago. Also, that no new plantations had been started, in spite of the certainty that the price of bark would advance again in a year or so. Again it was said that the excessive export was a consequence of the lack of money of the planters, who wanted to get rid of their Cinchona trees to make room for tea. And further, that many trees were dying off, and that the maximum of production had been already reached; also that planters were anxious to get rid of their bark plantations, as it was reported that large supplies of Java bark would soon be thrown on the market. It was also given out that the barks recently shipped from Ceylon showed a diminished percentage of quinine. This statement, however, has been shown to be unfounded. And, finally, attention was directed to the large quantities of root-bark brought to market, as a proof of the uprooting of plan-

tations, consignments of such bark being not seldom offered which represented some 50,000 trees, etc., etc.

How true these assertions are, and whether there is really any prospect of a diminished output from Ceylon, it is impossible to say at present. The exports from Java are certainly going to increase. And *cultivated bark* is received now also from Bolivia. "East-India" bark [meaning that raised in the Nilgiris and other places in the continent of Asia, in Hindostan, —in contradistinction to "Ceylon" bark] and Jamaica bark have not yet reached any commercial importance. The market of Lisbon, as well as of London, has also received experimental consignments of *African bark*, from Portuguese colonies, which promise well.

Citric Acid.—The lemon crop for the current year is reported to be of about the same unsatisfactory condition as that of last year. Hence, a fall in the price of citric acid is hardly to be expected. In Messina and Catania, the crop is estimated at 50 to 60 per cent, and in Palermo at 40 per cent of an average crop. One factor in this diminished production is the destruction of many small lemon-tree groves in the country districts, the farmers finding it more profitable to cultivate the grape.

Coca.—Large arrivals at Hamburg have caused a further decline in price. Occasionally the stock on hand amounts to 50,000 kilos. Fine green Bolivian coca brings 3 to 4 marks per kilo (about 37 to 50 cents per lb.). Peruvian and Truxilla coca, however, can be had for much less.

The consumption of coca in South America is also reported to be on the increase. This is said to be brought about by a crusade against the enormously increased use of alcohol and morphine, in consequence of which there has arisen a veritable *coca-mania* (which exists also in Europe and the U. S.). It has become fashionable in South American cafés to furnish *soda-water with coca*, *coca-wine*, *coca-cordial*, and a mixture of coca, chocolate, and coffee, which has received the name *cocabola*.

Cocaine.—Numerous invoices of crude cocaine are now sent to Europe from Lima, which materially interfere with the manufacture of the alkaloid in Europe.

Cod-liver Oil.—The cod fishery along the Lofoden Islands and the whole coast of Nordland (northern part of Norway) has been very productive, the total yield being 17,000 tons of steam-refined oil, and 57,000 tons of other qualities, against 14,300 and 37,000 tons in the preceding year. The fine yellow medicinal cod-liver oil, which has turned out this time to be superior in appearance and taste to the product of former years, has not been made in the usual quantities.

Codeine—as a hypnotic must be administered, according to Schneider, in much larger doses than was formerly supposed to be necessary. If given in doses up to 1 gramme (15½ grains) every 3 hours, it will be found to have sure effects. [The difficulty with the use of codeine in such quantities is only this, that it is so much higher in price, and that anything like an increased consumption, or an attempt to substitute it for morphine, will advance its cost still further. Physicians do not always know the cost of the medicines which they prescribe. Several cases have come to our knowledge recently, where codeine had been ordered in considerable amounts, and the inroad upon the pocket of the patients was so great that they concluded to do without a medical adviser.]

Ergot.—The stock on hand has become very small. If it is true that but little has been collected in Russia, a considerable advance must be expected. And, in fact, the price has already

risen 10% in Hamburg. Offers from Spain have so far not been received either. The imports at New York have amounted, during the past few years, on an average to 112,000 lbs. per year.

Extract of Cannabis Indica.—The chief consumption of this extract, according to Gehe & Co. (referring, of course, to the German market), appears to be for the preparation of the *salicylated collodion*, or corn remedy. For this purpose it is preferred of a handsome green color.

Extract of Ergot.—Gehe & Co. state that, as soon as enough of the fresh crop of ergot shall have reached them, they will undertake the manufacture of an alcoholic extract containing cornutin and sphacelinic acids, such as is proposed by Dr. Kobert. The name at present proposed for this preparation is *Extractum Secalis Cornuti cornutino-sphacelinicum Koberti*. [A shorter name will have to be invented for this.] As this extract is stated by Dr. Kobert to be prone to lose its efficacy by long keeping, it will be advisable to put it up in pills, which might be coated with collodion or keratin.

Formic Acid.—A strong acid of the spec. gr. 1.200 has been in active demand for the preparation of the so-called Hensel's Tonic. The formula for this, as given by the *Pharm. Centralhalle* (1882), is as follows:

HENSEL'S TONIC.

Marble Dust.....	80 parts.
Formic Acid, sp. gr. 1.200..	55 "
Sulphate Iron, cryst.....	21 "
Solution Tersulphate Iron,	
sp. gr. 1.318.....	100 "
Glacial Acetic Acid.....	300 "
Alcohol, sp. gr. 0.830 ..	400 "
Acetic Ether.....	15 "
Water.....	q. s.

Dissolve the Marble Dust in the Formic Acid diluted with 300 parts of Water. Mix the Glacial Acetic Acid with 300 parts of Water, dissolve in the solution the crystallized Sulphate of Iron, then add the Solution of Tersulphate of Iron, and afterwards the first-mentioned solution containing formate of calcium. Next add the Alcohol, and lastly the Acetic Ether, provided the preparation is to be employed at once. If the liquid can be allowed to stand for some time, the ether will develop of its own accord. The mixture will contain a precipitate of sulphate of calcium which is to be separated by filtration.

Ginger.—The unusual low quotation of Bengal Ginger does not appear to have frightened the producers or shippers of this brand. The other kinds were also available in considerable quantities and of good quality. African ginger is preferred for purposes of distillation.

Goa Powder.—The supply of this substance from Brazil has been very limited.

Gum Arabic.—The old routes of supply being practically closed, arrival of new stock is scanty and precarious. Had not the deficiency been supplied by other kinds of gums which were found suitable for certain kinds of manufacture, the price of the drug would certainly be much higher. The substitutes, such as East Indian, Amrad, Ghatti, Aden, and other gums have recently likewise advanced, and the same has taken place with gum Senegal.

Homeriana.—This nostrum, first recommended by a certain Homero, of Trieste, and said to be a South-Russian medicinal plant, appears to be still alive. It is nothing else but the common knot-grass (*Polygonum aviculare*). According to Falconi, this weed is said to have been very efficacious in treating cholera. [This is evidently a last gasping struggle for existence. The next we will hear of it, will be as a patent medicine.]

Hydrofluoric Acid has been recom-

mended by Chevy as a powerful antiseptic in tuberculosis, diphtheria, and septic wounds. The gaseous acid is said to be respirable without injury if diluted with air in the proportion of not less than one to 1,500.

Hyoscine.—The pure alkaloid is amorphous, and appears as a colorless, viscid syrup, which is difficultly soluble in water. The hydrobromate, being the most soluble salt, deserves the preference. Its internal administration requires great caution. For eye-drops (to dilate the pupil) a solution of 1 in 1,000 is sufficient. For hypodermic injections (as a hypnotic) a dose of $\frac{1}{16}$ to $\frac{1}{8}$ grain; and internally, in doses of $\frac{1}{16}$ to $\frac{1}{4}$ grain.

Iodine.—The supply on hand is said to be so great that a fall in the price is shortly to be expected. [This has already taken place to some extent.]

Iodol.—though it has the advantage over iodoform of being odorless, or nearly so, does not seem to make much headway, probably owing to its high price.

Jalap.—The main shipments of jalap have been landed at Hamburg instead of at London.

Kefyr.—The Kaukasian method of preparing fermented milk has found much favor, almost every large city of Germany (also of many other countries) possessing a kefy-establishment. Gehe & Co. remind their readers that the kefy-ferments require soaking before they are suitable for use. A quart of milk requires for its conversion into kefy about 160 grains of the ferment. The latter is not rendered inert thereby, but may be used repeatedly, if it is washed, after each use, with distilled water and a little soda, so as to remove adhering particles of fat and any acid present.

Laminaria.—Heretofore this has been employed only in form of tents. A demand has now also arisen for it in form of powder.

Lanolin.—as a base for ointments, is becoming more universally used.

Maté.—or Paraguay Tea is only used medicinally, and finds no favor as a beverage. In preparing maté-tea, by the way, it is important to allow it to "draw" not longer than 2, or at most 3 minutes.

Menthol, Japanese.—in crystals has dropped to one-half of its former price, in consequence of the excessive production of peppermint during the last few years. Japanese farmers are reported to have uprooted their mulberry plantations in order to grow peppermint. The liquid oil, after the crystals are extracted, finds but little favor or use, owing to its disagreeable taste. It is, at most, employed for purposes of adulteration. The Japanese government has made official inquiries regarding the quantities of menthol which are likely to be consumed in Europe and America, as well as in respect to methods by which the quality of the oil may be rendered equal in reputation to other native products.

Oil of Petit Grains.—The Paraguay oil, which has been of superior quality, is at present out of the market, but new supplies are expected. [We have had a small quantity of this oil, and certainly found it the finest we ever saw.—ED. AM. DR.]

Oil of Sandalwood.—The recent revival of the use of this oil for diseases of the urinary organs (gonorrhoea, etc.) has caused an increased consumption both of the East Indian and the West Indian oil. [The latter is not derived from a sandalwood at all.] Gehe & Co. think that the East Indian oil deserves the preference.

Oleoresin of Mule Fern.—The existence of this preparation, made in accordance with the Pharm. Germ. II., is much thicker than has been customary heretofore. Gehe & Co. think this a great improvement, as the new preparation does not deposit felicin.

[In this condition it also corresponds to the requirements of the U. S. Ph.]

Papayotin.—has become cheaper, and will therefore probably find a more extended employment. While its effects are acknowledged to be highly satisfactory in membranous croup, it is found to be useless in the infiltrated form. The best method of application is said to be in solution as follows:

Papayotin..... 5 parts.
Distilled Water.....100 "

Paint the parts every twenty or thirty minutes.

Gehe & Co. have examined the digestive power of different lots of papaya-juice, and found it to be from 20 to 70 times greater than that of the dried juice, which is used in the preparation of papayotin. The juice of fresh figs (from *Carica Papaya*), grown in Germany, was found to digest 40 times its weight of coagulated albumen.

Phosphorus.—A Russian factory has recently been erected for the manufacture of phosphorus. It is reported that the amorphous or red phosphorus put on the market by it, contains only about 80% of pure phosphorus, the other 20% being powdered hæmatite.

Peptones.—The dry forms sold by Gehe & Co. are prepared by the aid of pepsin, without the aid of acids, soda, or trypsin. The bitter taste of the dry peptones is best masked by adding about 25 per cent of dried extract of beef (prepared in vacuo).

Quinine.—The present price does not cover the expense of manufacture. Nevertheless, the factories turn out more than can be consumed. Commercial interests do not readily permit a diminution of production, and manufacturers want to be fully prepared for the period of advanced prices. American manufacturers find it now more advantageous to purchase quinine made on the continent of Europe, and to sell it under their own labels, than to make it themselves. [This is not true of all American manufacturers.]

In former times, when South American barks were exclusively used in the manufacture of quinine, the well-known so-called Liebig's test for the absence of other cinchona alkaloids, viz., with ammonia and ether, was perfectly sufficient. At the present time, when barks rich in cinchonidine are worked, the presence of the latter alkaloid in the commercial product is almost unavoidable [and the ether-ammonia test is no longer fully reliable]. It is well known that all sulphate of quinine of bulky, feathery, and light appearance contains sulphate of cinchonidine. To adopt de Vrij's proposition, viz., to use only the bisulphate in medicine, appears to be of doubtful propriety, as one-half of the acid in this salt is uncombined, and when taken internally, perhaps in frequent intervals, would produce gastric disturbances.

Rhubarb.—has not yet improved much in quality. Really handsome Shensi root is still unobtainable, but even the Canton and Shanghai sorts leave much to be desired, the bad management during drying having produced a dark, horny exterior, and a gray, spongy fracture. During the first seven months of this year, London received 762 chests, while 1,087 chests were disposed of. On August 1st, there were still on hand 1,726 chests, mostly of an inferior kind.

Salol.—This recently introduced substance, which is the salicylate of phenylic ether (see our last September number, p. 177) was first used by Dr. Sahli as a substitute for salicylate of sodium, where this was found to disagree with the stomach. The therapeutic results, in cases of rheumatism, were so favorable that it is probably going to be a standard drug. The reason why salol is so easily borne by the stomach is said to be this, that it

is not split into its component parts, salicylic acid and phenol, until it has reached the intestines. The dose of salol varies according to circumstances, but may amount to as much as 8 Gm. (about 2 drachms) per day.

Sapo Centrifugalis.—"Centrifuged" soaps owe their existence to Liebreich's original patent for saponifying oily fruits. These are first ground, then saponified in large boilers, and the soap separated from the cellulose by centrifugal machines. By repeating this process, hot, upon the soap first obtained, very fine medicinal soaps, of perfect neutrality and very good keeping qualities, may be obtained.

Spermaceti.—which has already advanced to three times its former value, is liable to rise still higher, if the reports of the poor results of the whaling fleet turn out to be correct.

Storax.—The consumption of liquid storax appears to have considerably increased during the last few years. At least the large quantities which reached Trieste have easily found purchasers. [It would be of interest to ascertain for what purposes these large quantities of storax are consumed.]

Tea.—How important a rôle the East Indian tea plantations play in the supply of this commodity to the world, and more particularly of England (where Japanese teas are not much liked), may be seen from the following table, giving the quantity of tea imported at London during the first six months of the two years, 1885 and 1886.

	Imports.	
	1885.	1886.
Chinese,	20,989,000	84,966,000
Japan,	43,000	23,000
Java,	1,739,000	2,159,000
India,	20,479,000	24,548,000
Ceylon,	1,885,000	8,048,000
Total,	44,635,000	68,739,000

Terpinol.—has been recommended by Dujardin-Beaumez as an expectorant in bronchial catarrh, in combination with bromide of sodium, his formula being:

Terpinol.... 16 grains.
Bromide of Sodium....16 "
Sugar..... q. s.

Make 10 pills.

Daily dose: 5 to 10 pills. (Compare our April number, p. 84.)

Thalline.—as an anti-pyretic, is highly useful, particularly in cases of phthisis, where it affords relief even in the most hopeless cases. Under its effects, feverish and enfeebled patients are able to remain out of bed for many hours, and time is thereby gained in acute cases.

Tonka Beans.—have been scarce and dear. The new crop in Angostura is reported to have been very good, between 200,000 and 300,000 pounds. It remains to be seen whether the New York speculators will succeed in maintaining their monopoly of this article.

Modified Compound Licorice Powder.

DR. MARTIN OXLEY writes, in *The Lancet*: Having found that compound licorice powder produced very severe griping in many instances, especially in young patients, he substituted anise for the fennel, and added a fourth part of ginger. The modified formula consisted of

Powdered Senna,
Powdered Licorice Root..... $\bar{a}\bar{a}$ 2 parts.
Anise,
Sulphur..... $\bar{a}\bar{a}$ 1 part.
Sugar 5 $\frac{1}{2}$ parts.
Powdered Ginger..... $\frac{1}{4}$ part.

This is quite as satisfactory in its effects, is less liable to cause griping, and is as pleasant to take as the original formula.

A new Reagent for Free Acids.

A RED coloring matter recently discovered by Böttger, which has received the commercial name "Congo-red," has been found to possess the property of changing its red tint into blue, under the influence of acids. A dilute alcoholic or aqueous solution of the substance has a bright-red color, and this is altered by acids to a handsome blue. The test is best applied in practice by impregnating filtering paper with the reagent, and this paper is in the market under the name Congo-paper. It is said to indicate the presence of so small a quantity as 0.0019 per cent of a free acid.

Heretofore this test-paper has been principally employed by paper manufacturers as an indicator for free sulphuric acid. Dr. Rud. v. Hoesslin now proposes it for clinical purposes.

Supposing that a specimen of gastric juice is to be tested, it is only necessary to place a drop or two (removed either with a sound or bougie, or obtained by vomiting) upon the reagent paper. If the latter assumes a blue color, free acid is present alongside of the acid salts. If only acid salts are present, the color of the paper remains unchanged. Acid urine, for instance, produces no change of color.

When the tint of the paper has been changed to blue, the question will arise, what kind of acid was present? Resuming the example of the gastric juice, it might be asked, was the acid lactic or hydrochloric? If the reaction was very decided, it may be assumed that the acid was hydrochloric, because the latter produces the alteration of color even when highly diluted, while lactic acid, diluted to only 1%, produces a much more feeble change. Of course, a final decision as to the kind of acid can only be reached by chemical tests.

Congo-red and Congo-paper appear to be serviceable for discovering free acids in other combinations.

Congo-red is a derivative of phenol, being prepared from tetrazo-diphenyl by treatment with benzidin and naphthylamine-sulphonic acid.—*After Neueste Erfind. und Erfahr.*, 1886, 375.

The Preparation of Mucilage of Acacia.

It is now generally accepted that a mucilage of gum arabic prepared in the cold is less liable to be muddy or opalescent, and to keep better. Nevertheless, there are occasionally voices heard in favor of the hot method, one of the latest being Mr. H. Nofke in the *Pharm. Zeit.* (No. 63), who says:

"By repeated experiments I have become convinced that the keeping qualities of mucilage of gum arabic are improved by using hot water for solution.

"The water is first heated to boiling, then allowed to cool to about 80° C. (176° F.), and this is then poured upon the gum arabic which had previously been carefully washed with cold distilled water. The whole is well covered, set aside in a cool place, and frequently stirred. Solution will take place quite rapidly. Any water lost by evaporation is replaced before straining. The straining must be done by passing the mucilage through a woollen strainer, previously washed repeatedly with distilled water. The strained mucilage should be filled into small bottles (2 to 8 oz.), which had previously been carefully dried in a drying oven, and must be still hot when filled. They should be filled to about three-fourths of the neck and at once corked, the cork, if possible, being pushed down so as to meet the surface of the mucilage.

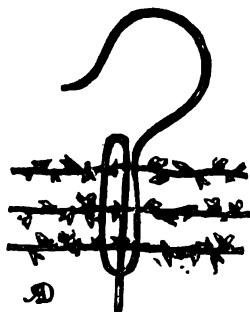
"Mucilage thus prepared is clear and bright, and, if put up as here

directed, keeps well, though it generally becomes faintly opalescent after a few days. But this happens also to mucilage prepared by the cold process.

"If the mucilage is heated in a steam bath, immediately after it has been strained, it will keep still better, but this second heating renders it quite opaque, which is not considered proper."

SOLUTIONS OF ALKALOIDS IN SEALED BULBS.

LEMOUSIN, the French pharmacist, has introduced to the market little globules of glass, in the form illustrated, containing, each, one cubic centimetre of a solution especially intended for hypodermic injection. Before the neck of the bulb is secured by melting the glass, the contents are sterilized and rendered free from destructive germs. The neck of the tube having been broken, the contents can be withdrawn by means of the hypodermic syringe and needle.—*Illus. Monatsch. der ärzt. Polyt.*



A NEW FLY EXTERMINATOR.

T. CHRISTY & Co., of London, well-known from their enterprise in the introduction of novelties, have a substance known as "Myocum," which is used by smearing it upon splints of wood or pieces of string. The latter can be hung vertically, but wooden splints can best be used by the use of an ingenious little wire clip, such as is shown in the figure, and which is so well adapted to other uses, and is so easily made, that we reproduce the illustration from the *British and Colonial Druggist*.

Menthol in Urticaria and Pruritus.

—Among the myriads of remedies for these troublesome affections, we have no other which affords such complete and instantaneous relief as a solution of menthol. Not only is the itching relieved for the time, but a cure seems to be effected. In pruritus and in eczema, moistening the parts with menthol solution causes an immediate cessation of the pain. The solution should contain from two to ten grains of menthol to the ounce of water.—*Amer. Jour. of Pharmacy*.

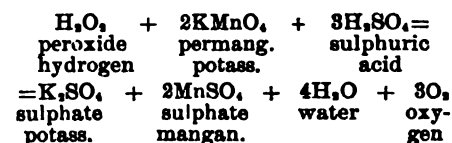
The *Hospital Gazette* contains a report of a case in which a boy 5 years of age, having eaten sufficient sorrel to cause symptoms of oxalic acid poisoning, drank a quantity of soapy water to quench his thirst. The action of the alkali resulted in the separation of soluble oxalate and death was caused very speedily. Post-mortem examination of the stomach disclosed a considerable amount of the poison.

A SATURATED solution of common salt in cider vinegar, taken in doses of a teaspoonful three or four times a day, is said to be a successful remedy for chronic diarrhoea.

Easy and Rapid Generation of Oxygen Gas.

INTO a generating vessel pour 1 kilogramme of peroxide of hydrogen (3%), and $\frac{1}{2}$ kilogramme of diluted sulphuric acid (1:5). Close the vessel with a stopper, through which passes the tube of a globe funnel provided with a stopcock, and which is charged with a saturated (1:16) solution of permanganate of potassium. The end of the funnel tube should be drawn out to a point, and turned upwards. On permitting the permanganate solution to pass, drop by drop, into the liquid contained in the vessel, oxygen gas will be given off. To fully decompose the quantity of peroxide of hydrogen, about 56 Gm. of permanganate are required, and 20 liters (about 1,220 cub. inch., or 5.28 gall.) of oxygen are obtained.—*Industrie Bl.*

NOTE OF ED. OF AM. DR.—The chemical reaction which takes place when permanganate of potassium and peroxide of hydrogen react upon each other in the presence of an acid is as follows:



Hence, all the oxygen of the permanganate, and one-half of the oxygen of the peroxide are set free.

THE possibility of administering an anæsthetic during sleep has been greatly doubted until recently, but a number of cases have been lately reported in which it has been accomplished. The latest instance is noted in *The Lancet* by Dr. J. Sellarshall. A man whose thigh had been fractured and who had been worn out with pain, and fell asleep before his limb was dressed, was anæsthetized and a dressing applied without awakening.

A CORRESPONDENT of the *Medical News* says that calomel is being tried in Vienna as a diuretic. It is efficacious only when the kidneys are healthy, and in some heart diseases without tissue changes [?] it produced diuresis where other remedies failed. Large doses were used. Salivation was rarely produced. No explanation was offered of its mode of action.

A STRONG infusion of *Capsicum annum*, mixed with equal bulk of mucilage of acacia and with a few drops of glycerin, is said by a writer in the *St. Louis Med. and Surg. Journ.* to be an excellent application to bruises and to a stiff neck. Two or three successive coatings, applied with a camel's-hair brush, if done immediately after the receipt of an injury, will prevent discoloration.

A DR. TAYLOR advocates in the *Medical World* the treatment of gonorrhoea, by introducing under the prepuce a mixture of morphine and cocaine salts with lanoline to the extent of $\frac{1}{2}$ grain of the cocaine in each application. He finds this adjunct to treatment produces complete numbness and thereby mitigates the symptoms of the disease.

EXPERIMENTS upon animals by Prof. Coze with urethan show that it antidotes the effects of strychnin. To illustrate the proportions required, a dog weighing 25 lbs. was given $\frac{1}{4}$ gr. of strychnine, and the poisonous effects were counteracted by 75 grains of urethan.

IODOFORM ointment (1:8 or 1:10) has yielded satisfactory results to A. T. Selitzky (a Russian physician) as an application to erysipelas. It lessens the swelling, pain, redness, and temperature.

Flower-farming and Perfume Manufacture in Southern France.*

FOR nearly a century the culture of flowers on a commercial scale, and the manufacture of perfumes and essences, have formed a special and lucrative industry in Southern France. The principal mart of this dainty manufacture is at Grasse, in the department of the Maritime Alps, but it is also conducted on a more or less extensive scale at Sommières, Nîmes, Nyons, Seillans, and other points in the consular district of Marseilles. A considerable portion of the product is exported to the United States, and as this export is steadily increasing, it may be of interest to examine the conditions of soil, climate, etc., under which flower-culture has flourished in this country, and to inquire whether the same industry might not be successfully established in certain portions of the United States. It is stated by perfumers here that the manufacture of perfumes from orange flowers has already been attempted in Florida and California, but that the enterprise has failed of complete success, because these essays were made with flowers of the edible orange, grown upon lowlands—conditions which would entail failure even in France, where the bitter and non-edible bigaradier, or the bergamot, grown in locations more or less elevated, is universally used for the production of perfume.

The subject divides itself naturally into two topics: First, the culture of the flowers and blossoms; secondly, the manufacture therefrom of the pomades, essences, and perfumed waters of commerce.

I.—FLOWER-FARMING IN PROVENCE.

The kinds of flowers principally grown, and their season of harvest, are the violet, jonquil, and mignonette, which are usually gathered in February, March, and April, although in mild, moist winters the violets begin as early as December; roses and orange-blossoms, with thyme and rosemary, in May and June; jasmines and tuberose, in July and August; lavender and spikenard in September; and the acacia in October and November. The harvest of flowers covers, therefore, about three-fourths of the year, but the season of greatest activity is May and June, when the roses and orange blossoms are gathered. Thyme, rosemary, and lavender are among the minor products, grown principally by rural farmers of the grape and olive, who have at home the simple apparatus required to distil the flowers and produce a more or less inferior class of essences, which are used to dilute and adulterate the superior essences produced at the larger establishments in towns and villages.

A TYPICAL FARM.

The conditions of industrial success in flower-growing can be best studied by a specific example, and for this purpose we select the plantation of Madame de Rostaing, at Seillans, in the department of Var. It includes about 23 acres, located on the southern slope of the Maritime foot-hills, about 2,000 feet above the level of the Mediterranean, and perhaps 20 miles from the coast. The calcareous soil was naturally thin and poor, and the olive trees, which had occupied the ground for a century or more, prior to 1881, yielded but scanty and unsatisfactory returns. The slope of the surface was so steep that the waters of a spring, which flows from the rocks above the tract, could be but imperfectly utilized for irrigation, and the land was regarded practically worthless. In 1881 the proprietress caused the olive trees to be removed and the land prepared for flower culture. First, the ground was

dug up to a depth of four feet, the larger stones removed and built into sustaining walls for the terraces into which the surface was divided and levelled. Along the upper margin of each terrace a shallow ditch was cut, connecting with transverse channels, which supply the spring-water for irrigation. The abruptness of the slope will be indicated by the fact that, on the tract of 18 acres, the terrace walls required to produce a series of level or gently sloping surfaces are 2,166 yards in length. Thus terraced, the tract yielded 17½ acres of prepared ground for planting. In the autumn of 1881, 45,000 tufts of violet, and 140,000 roots of the white jasmine were planted. The following spring the remainder of the ground was planted with roses, geraniums, tuberose, and jonquils, and a laboratory erected for the manufacture of perfumes. The location proved to have been well chosen; the flower plants grew vigorously and strong, and in 1885, the fourth year after planting, the flower farm of Seillans, which had previously yielded a rental of \$115 a year, produced, according to the statement of the proprietress, perfumes valued at \$43,154, and giving a net profit of \$7,767.86!

The difficult nature of the ground had made its preparation unusually laborious and expensive, but in the foregoing balance sheet for 1885 interest on the entire investment is included in the expense account, so that the profits as stated purport to be clear and legitimate. Of course, the plants and shrubs at Seillans have not yet reached their full productive capacity, but the results of the fourth year illustrate sufficiently how lucrative flower-farming may become in favorable locations and under good management.

ESSENTIAL CONDITIONS.

From observations at Seillans, and in the neighborhood of Grasse, where perfume-flower-growing is the leading branch of agriculture, the essential conditions appear to be:

(1) An altitude of from 500 to 2,000 feet. Flowers grown on such elevated locations are said to be far more rich in perfume than similar varieties which bloom in valleys and lowlands.

(2) A soil rich in calcareous elements.

(3) A situation sheltered from cold northern winds, and not subject to the white frosts which, in spring and autumn, affect the damp lowlands.

(4) In countries like Southern France, where the rainfall is always scanty and often wanting entirely from May until September, irrigation is essential to the culture of flowers, as well as every other crop: but it would seem that in the vast expanse of the United States, between the thirtieth and fortieth parallels of latitude, there might be found locations which combine all the requisite conditions of soil and exposure with sufficient humidity to secure natural and prolific growth.

There remains, finally, the somewhat vague and intangible question as to how far usage and experience are really essential to success in flower-growing and perfume manufacture. The people of Southern France are prone to believe that certain things peculiar to this country can never be successfully produced elsewhere. The gourmand of Marseilles will tell you that "*bouille-abaisse*," the famous "plat" of fish and toast flavored with saffron, can never be well made outside of Marseilles; the confectioners of Provence have no fear that their glazed and crystallized fruits can ever be successfully imitated beyond the frontiers of France; and, similarly, the perfume growers and distillers along this coast attribute their success not less to the peculiar climate of the Provence than to their minute knowledge of every detail of the business, a

knowledge acquired by more than a century of experience and transmitted from generation to generation of these simple, industrious people. Switzerland used to cherish similar ideas about watch-making and the embroidery manufacture, but both have been developed with entire success in other countries, and it is impossible to see in the perfume manufacture any art so obscure or difficult that it may not be learned and practised successfully in any part of the United States which offers the requisite conditions of climate.

One essential principle in perfume culture is that all fancy and "improved" varieties of flowers are discarded, and the natural, simple, old-fashioned kinds are exclusively grown. The roses on the slopes of Seillans are the common pink ones that grow under farm-house windows throughout the United States. The single wild violet is preferred to all the larger artificially developed varieties, and if there is a "double" tuberose on the place, I failed to notice it.

Only the white jasmine is used, the yellow and less fragrant variety seeming to be either discarded or unknown. Jasmine plants are set in rows, about ten inches apart, and are closely pruned. Roses are grown on the lower terraces, and are likewise cut low, and the ground between the plants heavily manured. After the roses have been gathered, the stem is cut to within a few inches of the ground so as to conserve for next season the entire vigor of the plant. During the harvest season, traders, or middlemen, go through the country every day with wagons collecting flowers from the farms, for which they pay prices varying according to the extent of the crop and demands of the market. Their fragrant load is hurried to the nearest manufacturer and delivered while the flowers are still fresh and crisp. The flowers should be gathered in the morning as soon as possible after the dews of the preceding night have disappeared.

II.—THE MANUFACTURE OF PERFUMES.

This includes the making of "pomades" and oils by the process of absorption, and of essences and essential oils by distillation. Every complete establishment is equipped with apparatus for all these processes. Pomades are the commercial vehicles for absorbing and transporting the perfumes of the jonquil, tuberose, jasmine, and some other species of flowers. A square frame, or *chassis*, of white-wood, about 20 by 30 inches in size, is set with a pane of strong plate glass. On either side of the glass is spread a thin, even layer of grease—two parts lard to one of tallow—which has been purified and refined by previous boiling and straining. Thus prepared, the frames are piled up in ranks 6 or 7 feet high to await the season of each special flower. When the blossoms arrive, the petals are picked from the stem (the pistils and stamens being discarded), and laid so as to cover the grease in each frame. These being again piled so as to rest upon their wooden edges, which fit closely together, there is formed a series of tight chambers, the floors and ceilings of which are of grease exposed to the perfume of the flower leaves within. The grease absorbs the perfume, the spent flowers are removed daily and fresh ones supplied, and this process goes on from two to four or five months, according to the desired strength of the pomade, which, when sufficiently charged with perfume, is taken from the glass with a wide thin spatula, and packed in tin cans or "stagnons" for export. By these methods the delicate odors of flowers are extracted, and retained for transport to distant markets, where, being treated with alcohol, they yield their perfume to that stronger vehicle, and

* Report of Consul Mason, of Marseilles.

produce the floral waters and extracts of commerce. Coarse pomades are made by boiling the flowers in the grease, and subjecting the residue to pressure. The spent pomades are used for toilet purposes, and in the manufacture of fine soaps.

OILS AND ESSENCES.

The process of preparing perfumed oils involves the same principle, except that, instead of solid grease, superfine olive-oil is used. With this oil, pieces of coarse cotton fabric are saturated, which are then spread upon wire netting, framed in wooden chases about 3 by 5 feet in size. The flowers are spread upon the saturated cloths, and the frames piled one upon another so that the perfume of the flowers is absorbed as in the previous process.

Essences and "flower waters" are produced by ordinary distillation, in which the flowers are boiled with water in large alembics: the vapor carries off the perfume, and is condensed in adjoining copper tanks, like ordinary spirits. Some of the retorts used for this purpose are of sufficient size to receive at once half a ton of fresh flowers, with the requisite water for their distillation. When "flower waters" are to be produced, alcohol is used in the distilling tank to receive the perfumes. By skillful combinations of the perfumes of different flowers, sometimes with the addition of chemicals, a large variety of handkerchief extracts, such as "Patchouly," "Jockey Club," "West End," etc., are produced at the original laboratory.

All these details of manufacture require careful and skilful manipulation, but there would seem to be no part of the process which cannot be promptly mastered by any good chemist, with sufficient enterprise to import a few experienced French operatives. A mild, uniform temperature is secured by the heavy stone buildings in which the process of absorption is conducted, and scrupulous cleanliness is required at every stage of the manufacture. After removing the pomades from the frames, the glass is removed and cleansed with alkalies, and the frames scraped to remove every vestige of grease, which, by becoming rancid, might spoil the product of the next operation.

The work of the manufactories is largely done by women, who earn 20 to 25 cents in a day's labor of ten hours. During the busy season of roses and orange flowers, they earn half as much more by working until midnight or later. Laborers on the flower farms earn the modest wages which pertain to all kinds of agricultural labor in this country, for there is nothing in the culture of flowers that is beyond the skill and understanding of an ordinary farm-hand, when directed by an intelligent and experienced overseer. As the wealth and popular taste for luxuries in the United States have continued to increase, our country has absorbed a constantly increasing proportion of the perfume product of Southern France. If the low wages that are now paid for the labor of girls and women in many forms of manufacture in American cities could be utilized in districts adapted to flower-growing, it would seem that the essential conditions for transplanting that fragrant and lucrative industry to the western hemisphere would be practically complete.

Marking Ink for Sacks.

Asphalt.....	1 oz.
Canada Balsam.....	1 "
Oil of Turpentine.....	4 "
Drop Black.....	q. s.

Dissolve the two first-named ingredients in the Oil of Turpentine, and add enough Drop Black to make a cream.—After *Chem. and Drugg.*

Gelatin.

GELOSE, which corresponds to the fucin of algae and pectose of fruits, is a mucilaginous substance derived from certain Japanese algae. It dissolves in hot water in the proportion of 550 times its volume, and, on cooling, forms a beautiful transparent jelly, which may be made to take any form, and its consistence can be varied to suit the occasion.

It will take up all medicinal substances soluble in water alone, or made so by the addition of alcohol, glycerin, acids, or alkalies. It may be used for medicated poultices, suppositories, cylinders, plates, or sheets. While drying it undergoes continuous retraction, by which, it is said, its medicinal contents are slowly expressed.—*Amer. Jour. of Med. Sc.*

[Gelose has been used for some time by French silk manufacturers for "weighting" the silk fibre, so as to impart a fictitious appearance of body to fabrics.—ED. AMER. DRUGGIST.]

Belgian Putz-Powder

For cleaning gold, silver, and other metals is prepared from :

Chalk.....	250 parts.
White Bole.....	100 "
Carbonate of Lead.....	125 "
Magnesia.....	20 "
Oxide of Iron.....	20 "

The mixture must be absolutely free from gritty particles.

"Putz-Rags."

THESE are woollen cloths or rags treated with some kind of "putz-powder," and are usually tinted or dyed red. They are usually prepared as follows :

Four parts of Castile soap are dissolved in 20 parts of water; the solution mixed with three parts of Tripoli, and tinted with fuchsin or corallin. Woollen rags are now dipped in the mixture, which must be stirred continuously, the excess of the mixture wrung out, and the rags then dried. The tripoli must be in an impalpable powder.

Dental Local Anæsthetic.

A CORRESPONDENT of *Dental Cosmos* recommends the following solution, which enables one or two teeth to be extracted at one sitting and under greatly diminished pain:

Stronger Ether.....	3 iss.
Menthol.....	3 i.
Fl. Ex. Cannabis Indica.....	gtt. xx.
Ol. Menthe Piperitæ.....	℥ xv.
Misce.	

Saturate absorbent cotton with a small quantity (about sixty drops) of the compound and apply to the gums, allowing it to remain about five minutes before operating.—*Chem. and Drugg.*

Varnish for Show-Bottle Labels, which dries in a few seconds, and produces a colorless, smooth, and shining coat, is prepared, according to R. Kiersten, as follows: Sandarac, 53 parts; mastic, 20 parts; camphor, 1 part; oil of lavender, 8 parts; Venice turpentine, 4 parts; ether, 6 parts; alcohol, 40 parts.

Macerate the ingredients for several weeks, until a perfect solution is made.—*National Druggist.*

To Clean Tartar from Teeth.—Dry Hypochlorite of Lime, $\frac{1}{2}$ drachm; Red Coral, 2 drachms. Triturate well and mix thoroughly. To employ it, moisten a new brush slightly, dip it into the powder, and apply to the teeth. A few days' use will produce a marked alteration in the appearance of the teeth.—*Sci. Amer.*

Chloral and Menthol is suggested by H. V. BECKER as a new compound. Equal portions being triturated and heated in a water-bath, not above 96° Fahr., until completely liquefied, produces an oily, colorless liquid having a mint-like odor, a camphoraceous, warm taste, and at 58° F. a s. g. of 1.1984. It is completely soluble in all proportions of alcohol, freely soluble in benzin, and soluble in chloroform, ether, and carbon bisulphide.—*Amer. Jour. of Pharm.*, June.

Permanganate of Potassium in solution, to the amount of one to two grains to the ounce of water, is recommended as a serviceable application to burns and frost bite. Züboff says that in the latter condition, especially, it relieves pain, allays inflammation, and prevents suppuration. One-half grain to the ounce is sufficient for application to burns.—*N. Y. Med. Jour.*

Naphthalin Lamellæ are prepared by applying a melted mixture of 25 parts of carbolic acid, 25 parts of ceresin, and 50 parts of naphthalin to the surface of unglazed paper placed upon a warm, metallic surface.—*Pharm. Zeitung.*

To Clarify Turbid Fruit-Syrups.—According to the *Rundschau*, this is best accomplished by the means used for clarifying honey. Heat the syrup in a copper or tin-lined kettle to about 80° or 90° C.; then stir in fragments of filter-paper, and allow it to boil again, stirring it meanwhile. Strain through a funnel-shaped flannel bag, and repeat the straining until it runs clear.—*National Druggist.*

Elastic Mucilage.—To 20 parts of alcohol add 1 part of salicylic acid, 3 parts of soft soap, and 3 parts of glycerin. Shake thoroughly, and add it to a mixture of mucilage made with about 93 parts of gum Arabic and 180 parts of water. This is said to keep well and to remain elastic without tendency to cracking when dry.

Florida Water.—2 drachms each of the oils of Lavender, Bergamot, and Lemon; 1 drachm each of the Tincture of Turmeric and Oil of Neroli; 30 drops of Oil of Balm, and 10 drops of Oil of Rose. Mix these with 2 pints of deodorized Alcohol.—*Sci. Amer.*

The Specific Gravity of Crystalline Strychnine is given by Thomas P. Blunt, in the *Pharm. Jour. and Trans.* as 1.13.

Tin Oleate for the Nails.—Thomas H. Irquhart writes to the *Therapeutic Gazette*: "I used tin oleate some months ago on my finger nails, which commenced to split and break soon after I left the army, the result of scurvy, contracted in the military service. I anointed the nails every day with the oleate, and at night applied it on a narrow flannel bandage. In about two months all the nails were sound and tough. I applied the oleate to the nails of a young lady friend, with like success. It is also a beautiful polish for the nails."

Thalline.—Mayrhofer has experimented with the sulphate, tannate, and tartrate of thalline in an epidemic of typhoid occurring in a Bavarian regiment, with a view to discovering which is the best salt. As a rule, 0.2 gramme was given at a dose, and repeated as the temperature rose. The quantity consumed was 1 to 2 grammes per diem, and from 8 to 26 grammes in different cases. No difference was observed in the action of the three salts. After taking the medicine, profuse perspiration occurred, and the condition of the patients invariably improved. Of the eighty-eight cases, three (3.4%) died.

CORRESPONDENCE.

GENTS:—I see by an article in *Scientific American*, copied from your journal, that oils are distilled from cedar chips or shavings. In Wisconsin and Vermont, cedar and balsam and hemlock oils are all distilled from second growth timber, and from the boughs of large trees. I will commence to distill those about the 15th or 16th of Oct. The brush is all cut up by a large cutting machine, such as they use in large farm barns, but is run by steam. Almost all the work is done by steam. Can give you any information you want. Yours,
M. McDONALD.

STURGEON BAY, DOOR CO., WIS.

QUERES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,781.—*Syrupus Corrigens* (F. R. H.).

Our correspondent asks us what "Syrup Corrigans" is. He no doubt means *Syrupus Corrigens*, a title applied to various aromatic syrups, devised for the purpose of disguising the bitter taste of quinine. Some of these syrups have liquorice for a base; but this is rather inconvenient, as the glycyrrhizin will gradually combine with and be precipitated along with the quinine, even when there was no acid present.

An aromatic syrup of Yerba Santa (*Eriodictyon*) has for several years been sold by different makers for such purposes, and on page 41 of our last March number will be found a formula proposed by Mr. J. D. Aug. Hartz, of College Point, N. Y., which furnishes a very good preparation. The object, in this case, is not to retain in the syrup any medicinally useful constituents which the Yerba Santa may contain, but rather to obtain the peculiar taste and flavor produced in the course of preparation. Mr. Hartz proposed the title *Syrupus Corrigens* for his syrup.

Another formula for an aromatic syrup of Yerba Santa is the following, which also furnishes a very good result:

Syrupus Eriodictyi Aromaticus.

Fluid Extract of Yerba Santa...	1 fl. oz.
Solution of Potassa.....	180 min.
Comp. Tincture of Cardamom..	1 fl. oz.
Oil of Sas.-afra.....	2 min.
" " Lemon.....	2 "
" " Cloves.....	4 "
Alcohol.....	1 fl. oz.
Sugar.....	14 tr. oz.
Water.....	enough to make 16 fl. oz.

Mix the Fluid Extract and solution of Potassa, then add 1½ fl. oz. of water, previously mixed with the Compound Tincture of Cardamom, and lastly add the Alcohol holding the oils in solution. Filter and pass enough Alcohol through the filter to obtain 6 fl. oz. of filtrate. Pour this upon the Sugar contained in a bottle, and dissolve by placing the bottle in hot water, frequently agitating.

No. 1,782.—Brunswick Black (T. G. S., Adelaide).

This is a black asphalt varnish for iron-work, prepared in the following manner:

Fuse 2 lbs. of best native asphaltum in an iron pot, add 1 pint of hot boiled linseed oil, mix well, remove from the

fire, allow to cool somewhat, then add ½ gallon oil of turpentine. If it is desired to dry quickly, add some patent drier.

A cheaper preparation may be made as follows:

Boil together 2½ lbs. each of black pitch and gas-tar asphaltum for several hours, then add 6½ pints of linseed oil, and 1 lb. each of litharge and red-lead. Boil again, and finally add 2 gallons of oil of turpentine.

No. 1,783.—Asphaltum (T. G. S., Adelaide).

The best and purest native asphaltum is found at certain localities of the shores of the Dead Sea, in the Great Pitch Lake of Trinidad, and near Coxitambo in Peru. If you desire to import some into Australia, you will find it most convenient to get the last-named variety, which is very pure. Apply to some firm having dealings with Lima or Callao.

No. 1,784.—Compound Syrup of Sarsaparilla (D. F. & Co.).

If your friend wishes to obtain the best preparation, he had better procure that made strictly in compliance with the United States Pharmacopoeia. Any pharmacist will show him the formula, which we cannot copy here as it will consume space needlessly.

If he wants a preparation similar to some of the popular advertised syrups of sarsaparilla, you should remember that most of these do not base their efficacy upon the sarsaparilla, but upon certain other ingredients, among which iodide of potassium and even bichloride of mercury are not wanting, but which are carefully ignored on the label.

Our advice is, if your friend is in need of a preparation containing these secondary constituents, let him consult a physician. If he does not, then the official syrup is all that he requires.

We cannot recommend any of the proprietary preparations, though some may be good enough in their way.

No. 1,785.—Hostetter's Bitters (J. R. K. & Co.).

A formula for Hostetter's Bitters was communicated to this journal (NEW REMEDIES, 1883, pp. 313) by Mr. C. M. Shofer, Ph.G., of Canal Fulton, Ohio. It is as follows:

Calamus.....	2 lbs.
Orange Peel.....	2 "
Cinchona.....	2 "
Gentian.....	2 "
Colombo.....	2 "
Rhubarb.....	8 oz.
Cinnamon.....	4 "
Cloves.....	2 "
Diluted Alcohol.....	4 gall.
Water.....	2 "
Sugar.....	2 lbs.

We cannot say whether the product resembles the genuine.

No. 1,786.—Emulsion of Balsam of Tolu (D. J.).

This is a preparation of the French Pharmacopoeia. It is prepared as follows:

Balsam of Tolu.....	20 parts.
Alcohol, 90%.....	100 "
Tincture of Quillaia.....	100 "
Distilled Water, hot.....	780 "

Dissolve the Balsam of Tolu in the Alcohol, and add the Tincture. Then make an emulsion by adding the water gradually.

The *Codex* adds the note that emulsions of Balsam of Copaiba, Oil of Cade, and Tar may be prepared in the same manner.

No. 1,787.—Disguising Quinine (J. O.).

Phosphate of sodium as an agent to disguise the taste of quinine was recommended by F. Lascar, in a paper

read at the last annual meeting of the Louisiana Pharm. Association. The author recommended the following mixture:

Sulphate of Quinine.....	1 part.
Sugar of Milk.....	1 "
Phosphate of Sodium.....	2 parts.

These substances are to be triturated together, which will cause the sulphate of quinine to be converted into the phosphate, a less soluble salt than the sulphate. The author also recommends to add to the mixture ½ or 1 grain of saccharin for every grain of quinine.

No. 1,788.—Phosphorus Paste (O.).
The following is one of the formulæ recommended:

Make a paste in the usual manner, from 800 parts of starch and 5,000 parts of water, by the aid of heat, and cool it to about 86° F. Dissolve 150 parts of phosphorus in 60 parts of disulphide of carbon, with great caution, in a glass-stoppered vial. Add the solution to a paste prepared from 10 parts of powdered gum arabic, 15 parts of powdered tragacanth, and 150 parts of water, contained in a suitable mortar, and mix intimately. Finally add this emulsion to the starch paste first prepared, mix thoroughly, and transfer the paste to wide-mouthed vials which must be carefully stoppered.

No. 1,789.—The Administration and the Purity of Terebene (W. S. D.).

It has recently been recommended (i. *Therap. Gaz.*) to administer terebene in lozenges, and the following formula is suggested:

Terebene.....	8½ drachms.
Acacia, powd.....	3 "
Sugar, powd.....	6 tr. oz.
Tragacanth, powd.....	2 tr. oz.
Water.....	2 fl. oz.

With the Terebene, Acacia, and Water, make an emulsion, which is to be mixed with the Sugar and Tragacanth, and the resulting mass is to be made into 100 lozenges.

Another formula of administration, viz., an emulsion, is recommended in the same paper:

Terebene.....	4 drachms.
Acacia, powd.....	8 "
Water, q. s. to make.....	2 fl. oz.
Syrup of Ginger.....	1 fl. oz.

Triturate the Acacia and Terebene thoroughly together in a dry mortar, then add the water all at once, rubbing rapidly until a crackling sound appears. Then add the Syrup of Ginger. The latter imparts some color to the emulsion, but it helps to cover the taste of the terebene.

Regarding the *purity* of terebene of commerce, notice should be taken of the statements made by Mr. W. L. Scott, in a paper read before the last British Pharmaceutical Conference. He found that most of the commercial so-called "pure terebenes" are contaminated with resin, turpentine, and peroxide of hydrogen. Three samples contained over 1 per cent of resin, and only four of them were free from peroxide of hydrogen, which, according to the author, is very liable to be present, no matter how carefully the terebene had been prepared. Its formation may be prevented by keeping a bag of silver oxide in the liquid.

No. 1,790.—Enamel-Ink (B. J.).

An ink, or rather varnish, for writing labels which are intended to resist the action of acids, etc., may be prepared as follows:

20 parts of shellac are dissolved in solution of 30 parts of borax in 300 to 400 parts of water, with the aid of heat, and the solution is filtered hot. To the filtrate are added 10 parts of water-soluble nigrosin, 0.3 parts of tannic acid, 0.1 part of picric acid, 15 parts

of water of ammonia, and enough water to produce the proper degree of dilution. The ink should be of such consistence that it will readily flow from the pen.

No. 1,791.—Chevreuil or Chevreul? (A. DeF.).

It appears to us now that we would have done better to adopt the spelling Chevreul, for this is the way in which the author writes his name. The latter is, of course, identical with *Chevreuil*, the French term for *roe-buck*. That the family-name has often been written Chevreuil, even by members of the family itself, there appears to be ample proof. (See *Callisen, Medic. Schriftsteller-Lexikon*, IV., 117 and 124.) Modern bibliographical authorities are somewhat divided on the mode of spelling, most of them adopting Chevreul, but others write Chevreuil, so for instance the large new *Bibliographisches Lexikon der hervorragenden Aerzte aller Zeiten und Völker*, 8vo, Wien, 1884, Vol. II., page 7.

No. 1,792.—Curd Soap (W. H. H. C., Buffalo, N. Y.).

"Awhile back I saw a receipt in your journal for shaving-cream. It calls for 'curd soap.' Our druggists do not know what that is. Can you tell me what it is by any other name, or where it can be procured?"

In answer to the above, we quote from *Ure's Dictionary* the following concise statement:

"On the continent, olive oil mixed with about one-fifth of rape oil is principally used in making hard soap. This addition of rape oil is always resorted to, because olive oil alone yields a soap so hard and so compact that it dissolves only with difficulty and slowly in water, which is not the case with rape oil and other oils of a similar nature; that is to say, with oils which become thick and viscid by exposure, and which on that account are called drying oils, experience having taught that the oils which dry the soonest by exposure yield with soda a softer soap than that made with oils which, like olive oil, remain limpid for a long period under the influence of the air. The admixture of rape oil has, therefore, the effect of modifying the degree of hardness of the soap, and, consequently, of promoting its solubility. In England, tallow is used instead of olive oil, the soap resulting from its treatment with soda is known under the name of *curd soap*, and is remarkable for the extreme difficulty with which it dissolves in water. The small, white, cubic, waxy, stubborn masses which, until a few years ago, were generally met with on the washing-stands of bedrooms in hotels, and which, for an indefinite period passed on from traveller to traveller, each in turn unsuccessfully attempting, by various devices and cunning immersions in water to coax into a lather, is *curd soap*."

Any of the finer qualities of soda soap made with tallow, and as free from uncombined alkali as possible, will probably fill the bill. Possibly, white Castile Soap (Conti's) might also be used, but this is certainly not meant by "curd soap."

No. 1,793.—Paste for affixing Labels to Tin (Subscriber).

A recent collection of practical receipts recommends the three following methods as the most effective.

1. Soak any desired quantity of glue in cold water. When it is soft, pour off the excess, add strong vinegar, and heat the mixture to boiling. About 8 parts of vinegar (of at least 6 per cent) are needed for 1 part of glue. Finally, thicken the liquid, while boiling, by the addition of a sufficient quantity of the best wheat flour.

2. Make starch paste in the usual manner, but while it is hot, add to it a little Venice turpentine, which it will take up without difficulty.

3. Coat the place where the label is

to be affixed with solution of tannic acid or shellac, allow it to dry, and then affix the label, previously pasted, and moistened.

The following is recommended by Mr. H. John in the *Pharm. Zeitung*.

Coat the place with a dilute tincture of damar, allow to become almost dry, and then press upon it the label, freshly pasted with mucilage, and still what moist. Gummed labels should previously be moistened with water to render them more flexible.

The author recommends this method for bronzed tin boxes. But it will also answer for bare tin.

Suppositories may be made with extracts, according to *Der Pharmaceut*, by filling the forms with melted cocoa-butter, cooling them partially and then adding to each the proper amount of extract softened with a little glycerin. The suppositories can be removed from the moulds in about five minutes thereafter, and will be found satisfactory.

Infusion of Senna is said by Leutke to be rendered much less liable to fermentation if, while it is fresh, it is rendered alkaline with bicarbonate of sodium.

A Columbus, Ohio, drug-clerk recently gave a customer a dose of castor oil in laudanum instead of whiskey. The patient detected the difference, and verified the mistake by the label on the bottle in the clerk's hand. The proper antidotes prevented any serious results.

Nitrite of Amyl was used, by a writer in *L'Union Médicale*, in the treatment of a case of opium narcosis, and its inhalation brought on a rapid cure when belladonna had failed and the patient was apparently almost beyond help.

Tribromide of Allyl, which has been known since 1857, has been found by Dr. de Fleury to be a serviceable remedy in the treatment of hysteria, infantile convulsions, angina, and asthma. The remedy may be given in capsules in doses of 5 minims, and 10 to 20 minims may be taken in twenty-four hours. It can also be used hypodermically to the extent of 2 to 4 drops dissolved in 2 cubic centimetres of ether.—*Lancet*.

Salicylated Beer.—The custom of employing salicylic acid to prevent deterioration of beer is the subject of active discussion in French journals. The quantity of the acid employed is by no means inappreciable. It is computed that the salicylated beer of Paris contains more than 20 centigrammes per liter, so that a considerable quantity is taken by a thirsty beer consumer. *The Lancet*, commenting upon this fact, says: "There are grounds for believing that the rate of elimination of the antiseptic drug is by no means rapid, and any congestion of the kidneys or liver would certainly retard its excretion in great degree. Again, we are not sure, even supposing that the substance were excreted completely, that constantly having the tissues bathed by a weak solution of salicylic acid would be unattended with danger. Salicylic acid is a member of a dangerous group of chemical bodies, the best-known of which, carbonic acid, is a most rapid and fatal poison."

Aniline Oil is being used as an anæsthetic in minor operations, such as opening a felon. The finger, having been immersed for a short time in the oil, may be cut to the bone without pain.

Spirit of Turpentine will remove unpleasant odors from the hands, when all other deodorants fail.

BIBLIOGRAPHY.

FIFTH ANNUAL REPORT OF THE ILLINOIS BOARD OF PHARMACY, with Abstract of State Pharmacy Register, 1886, pp. 184, 8vo.

THIS report might as well serve as a model, owing to the comprehensive character of its contents.

PROCEEDINGS of the Eighth Annual Meeting of the New York State Pharmaceutical Association, held in Rochester, June 8th, 9th, and 10th, 1886. Also the Constitution, By-laws, and Roll of Members. Elmira, N. Y.: Advertiser Association, printers, 1886, pp. 269, 8vo.

THIS volume is the most sumptuous of the series. The largest amount of space in the work is occupied by the minutes of the meeting, which are, indeed, rather more prolix than practical. The nineteen papers and reports are of practical value, some of them being especially so. The text of recent laws regulating the practice of pharmacy are of great importance. A novel feature is the insertion, as a frontispiece, of a small map of the State. The whole is altogether very creditable to the secretary and printers.

PROCEEDINGS of the Pennsylvania Pharmaceutical Association at its Ninth Annual Meeting, held at Lebanon, June 8th, 9th, and 10th, 1886, with the Constitution, By-laws, Code of Ethics, and Roll of Members. Harrisburg, Pa., 1886, pp. 250 + 54, 8vo.

BESIDES the usual minutes and lists of members, etc., the volume contains a codification of resolutions, recommendations, and State laws, and, in the form of an appendix, a report by the Committee on Unofficial Formulas, embracing one hundred and fifty-three titles. The volume will be found of value as a work for reference.

PROCEEDINGS of the North Carolina Pharmaceutical Association at its Seventh Annual Meeting, held at Fayetteville, Aug. 11th and 12th, 1886, with Constitution and By-laws, Pharmacy Laws, List of Members, and List of Registered Pharmacists in North Carolina. Statesville, N. C., 1886, pp. 128, 8vo.

THIS report shows an active interest in the promotion of pharmaceutical progress in North Carolina.

A LABORATORY GUIDE IN URINALYSIS AND TOXICOLOGY. By R. A. WITTHAUS, A.M., M.D., Prof. of Chem. and Physics in the Med. Dept. Univ. of the City of New York; Prof. of Chem. and Tox. in the Med. Dept. of the Univ. of Buffalo and in the Med. Dept. of the Univ. of Vermont; Prof. of Pharm. Chem. in the Dept. of Pharm. of the Univ. of Buffalo, etc. New York: William Wood & Co., 1886, pp. 75.

THIS manual covers very completely the range of clinical chemistry demanded by the practising physician, and is especially well-suited as a textbook for clinical students, owing to its convenient arrangement, concise statements, thorough indexing, and abundance of illustrations.

PRACTICAL AND ANALYTICAL CHEMISTRY; being a complete course in chemical analysis. By HENRY TRIMBLE, Ph.G., Professor of Anal. Chem. in the Philadelphia Coll. of Pharm. Second edition, revised, enlarged, and illustrated. 8vo. Philadelphia, 1886. (P. Blakiston, Son & Co.)

WE have already given a summary of the contents of this text-book when mentioning the first edition. In its present improved shape, it will undoubtedly be a useful and practical guide for the student in the laboratory. The author has introduced several new features, one of the most useful being a systematic grouping of acids, whereby their recognition and separation is greatly facilitated.

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Whole No. 150.

[ORIGINAL COMMUNICATION.]

"PEPSINS OF COMMERCE."

BY EDWARD GOEBEL.

It would probably be a difficult task to find a drug in the American market at the present time which varies so greatly in composition, physical characters, and strength as does the *Pepsin* offered by the various manufacturers, and their name is legion.

The pharmacopoeial recognition of a definite digestive standard for a diluted or *saccharated* pepsin does not seem in any way to have aided the establishment of any kind of uniformity in the commercial article. There are now on the market a number of so-called "*pure*" or "*concentrated*" pepsins, all prepared apparently by precipitation according to the process of Prof. Scheffer, as also numerous so-called "*scale pepsins*." All of these preparations are of a much higher digestive strength than the official *saccharated* pepsin, and are recommended for the extemporaneous preparation of this latter article by diluting with sugar of milk. They find an extensive use in the compounding of pharmaceuticals containing pepsin, besides being prescribed by physicians who consider the official pepsin too weak.

The object of this paper is to show the comparative merits of these *stronger* pepsins only, the commercial *saccharated* pepsins being entirely disregarded. The experiments made by the writer, and submitted below, seem to prove conclusively that if, in using these pepsins, one judges of their respective merit as digestive agents merely by what the makers claim, very uncertain results must surely be obtained.

Only a few manufacturers give a *specific test*, the others stating merely that their article will digest so many grains of albumen. Some claim much less than their products were found to digest, while others, notably the *scale* pepsin men, make claims which, in the face of the *actual* peptic properties their goods were found to possess, are evidence of a degree of modesty that is truly charming.

All samples examined, with the exception of No. 3, which was taken from the stock of a jobbing-house, were obtained from the makers direct, and it is therefore supposed that the results obtained with these samples are a fair index to the value of their average products offered for sale.

The tests were carried out with the greatest possible care toward the maintenance of uniform conditions for all samples operated with, as follows:

1. Solution of the Pepsin.

0.065 (1 grain) of each sample was weighed into numbered twelve-ounce wide-mouthed bottles containing eight (8) fluidounces of acidulated water. This acidulated water was made in the proportion of two (2) ounces c. p. hydrochloric acid to one (1) gallon distilled water, each 8 fluidounces representing consequently 1 drachm of hydrochloric acid. A very marked difference was noticed in the solubility of the samples; none, however, left more than traces of undissolved matter after standing an hour or so.

2. Condition of Albumen.

Several dozen eggs, as fresh as could be obtained, were boiled for fifteen minutes, the water poured off and the eggs allowed to cool before removing the shells. The albumen, freed from all yolk, was pressed through a No. 12 wire sieve. Some operators have used

a more finely divided albumen, but considerable experience in testing pepsins led the writer to use the No. 12 shred form as the most practicable. The albumen thus divided was uniformly mixed with a spatula (some eggs furnishing a soft, watery albumen, and others a harder and denser form) and weighed into the pepsin solutions at once.

3. Amount of Albumen used.

Notwithstanding that as much as 1,500 grains was claimed as the dissolving power of some samples examined, it was deemed safe to subject only 1,000 grs. of albumen to the action of one (1) grain of pepsin in the (8) eight ounces of acidulated water.

4. Temperature, etc.

It was aimed to keep the temperature at 104° F. by means of a water bath, and it never varied more than two or three degrees either way from that point. It not proving practicable to operate with all the samples at once, two sets of tests were made with six and seven samples respectively, but the same precautions were scrupulously observed in each case. Each mixture was shaken moderately every three to ten minutes.

5. Time allowed for digestion.

Six hours was deemed ample time for the samples to display their virtue as digestive agents, for any peptonization of albumen which any given kind or sample of pepsin may effect after the expiration of that time, cannot add to its value as a digestive agent, from a physiological point of view. At the same time it is a well-known fact that, by virtue of its character of a *ferment*, a pepsin, though of indifferent value, will *eventually* peptonize an almost indefinite amount of albumen. Perhaps it is under these conditions that some manufacturers claim that their products will dissolve the quantities of albumen they name.

6. Estimation of the amount of albumen dissolved.

After various experiments it was found most expeditious and accurate to separate the undissolved matter, *dry* it, and calculate the amount of albumen digested from this. Absolute accuracy is, however, difficult to obtain in any manner. After the expiration of six hours not a single sample had dissolved the entire 1,000 grains of albumen used. The undissolved portion was washed as thoroughly as possible by repeated *decantation*, and finally thrown upon a double counter-balanced filter. This was allowed to drain, dried thoroughly in a water bath, and every fifteen (15) grains of dry residue were calculated as equivalent to one hundred (100) grains of undissolved albumen, it having been ascertained by exsiccation that the albumen used originally contained 15% of fixed matter. This operation is very easily carried out with those samples which have digested not more than about one-half or two-thirds of the albumen used, the undissolved portion being then in a condition to admit of ready filtration and *drying in the filters*. Those samples, however, which proved more active left the albumen in a peculiar gelatinous semi-peptonized state, from which it was very troublesome to filter the remaining liquid, and these samples it was found best to wash thoroughly by decantation, drain upon a filter as far as possible, transfer the contents of the filter to a *capsule* and dry it in this. This partially peptonized albumen, when heated, is converted into a semi-liquid mass

showing that the albumen, though undigested after six hours, has undergone a partial change toward becoming a soluble peptone.

The attached table shows results obtained with different brands, the "*precipitated*" pepsins being placed together and the *scale* pepsins likewise, so as to exhibit the comparative digestive value of the two forms:

No. of Samples.	Claims Made.	Residue obtained by washing and drying undissolved portions of 1,000 grains Albumen used in each Test, and corresponding amount of Egg-Albumen.										Amount of Albumen Digested in Six Hours by One Grain Pepsin.
		Dry Residue.										
Precipitated or so-called Pure or Concentrated Pepsins in Powder form		1 gr. digests 1,150 grs. albumen	18 grains	×	6.66	=	98 grains	914 grains.				
	I.	" " " 300 to 500 grs. albumen	32	"	"	=	193	847 "				
	II.	" " " 400 grs. albumen	30.5	"	"	=	197	806 "				
	III.	" " " 800 to 1,000 grs. albumen	32	"	"	=	326	707 "				
	IV.	" " " 300 grs. albumen	30.5	"	"	=	327	703 "				
	V.	" " " 1,000 grs. albumen	32	"	"	=	326	734 "				
	VI.	No claim made	32	"	"	=	430	580 "				
	VII.	Prepared from calves' rennet.	37	"	"	×	560	430 "				
Pepsins in form of Scales.		1 gr. digests 1,000 grs. albumen	40.5 grains	×	6.66	=	270 grains	730 grains.				
	I.	" " " 1,300 to 1,500 grs. albumen	60	"	"	=	400	600 "				
	II.	" " " 1,000 grs. albumen	79	"	"	=	586	474 "				
	III.	The purest, cheapest, and strongest pepsin in the world.	82.5	"	"	=	560	450 "				
	IV.	Guaranteed equal in digestive power to any on the market.	96	"	"	×	600	340 "				

[Note.—In the above table, the term 6.66 has been substituted by us, for convenience's sake, in place of the fraction $\frac{1}{15}$ written by the author.—ED. AM. DR.]

These tests are offered as a practical demonstration of the fact that the different commercial pepsins vary widely in digestive strength, and that the mere *claim* made by the respective manufacturers cannot be relied upon as a true index of their comparative merits. It seems also that a far more active and more desirable preparation can be produced by the method of precipitation (Prof. Scheffer's process) than by the processes followed in making the *scale* pepsins, for of eight (8) samples of the former, six (6) are more active than the best sample of *scale* pepsins the writer was able to procure.

Of the eight powdered pepsins, no two, however, were alike in physical characters; marked degrees of difference in odor, taste, color, solubility, etc., being noticeable. Number 3 is, judging from these properties, unquestionably the purest and most desirable sample of the entire lot.

The *scale* pepsins are evidently not as *stable* as the powdered pepsins, for, without exception, they develop on keeping a highly offensive putrid odor, and it is therefore reasonable to suppose that the peptic properties will also depreciate in time. But not wishing to form hasty conclusions adversely to any class of manufacturers, the

writer intends to re-examine the samples in his possession at a later date in order to satisfy himself and others who may be interested in this subject, of the comparative stability of the different pepsins. The recognition of a *stronger* pepsin than the present official form and the adoption of a *method* of preparation, as well as more specific tests of purity, etc., by the next U. S. Pharmacopœia appear desirable.

LOUISVILLE, KY., September, 1886.

P. S.

Editor *American Druggist*.

This paper was written without any knowledge of the able work of Dr. Eccles "A Study of Pepsin," which has been recently published and is being used as an advertisement by a manufacturer of pepsin, whose article Dr. Eccles finds superior to others, although the writer's experiments place that particular brand No. 7 out of a total of 13 samples examined. It is not my intention to reflect upon that paper or any other published heretofore, but I certainly do not agree with Dr. Eccles in his very severe and sarcastic criticism of the Pharmacopœia Committee, and cannot indorse his statement that, "*In temperature they tried to mimic biological nature, and blundered by doing so.*" The peptonizing properties of a pepsin at 130° F. can hardly be an index of the peptic value of that pepsin in the human stomach.

E. GOEBEL.

Comparative Power of Gun-Powder and Dynamite.

ONE of the foremost authorities upon the field of high explosives, Isidore Trauzl, of Vienna, makes the following comparison:

1 kilo of gunpowder compressed into a cube of 100 millimeter in all dimensions, when ignited in a confined space, can develop in 0.01 second of time more than 200,000 meter-kilogrammes of power, that is, it can exert a power equal to that required to lift 200,000 kilos 1 meter high in 1 second of time. On the other hand, 1 kilo of dynamite, when compressed into a cube measuring only 90 millimeters in all dimensions, can develop in 0.00002 second nearly 1,000,000 meter-kilogrammes of power.

Drying in Vacuo.

ACCORDING to E. Pfüger, the exhaustion in a vacuum may be considerably increased by removing the aqueous vapor after the air has been pumped out as far as possible. If a space covered by a bell-glass is exhausted by a water-jet vacuum pump (or filter pump) at 15° or 16° C., it is possible to depress the pressure under the globe to 11 millimeters mercury, but no further. But if sulphuric acid is now allowed to flow into the bell-glass while the exhaustion is continued the pressure will sink to 1 millimeter. The excess of pressure, therefore, namely 10 millimeters, is due to aqueous vapor. When this is removed, almost a complete vacuum is established. It follows from this that when a substance is to be dried in vacuo over sulphuric acid, the latter should not be admitted until the filter pump has exhausted the air-space as completely as possible.—After *Arch. f. Physiologie*.

Antiseptic Paper.—Dr. Bedoin, of the military hospital of Vincennes, makes a light, cheap, and effective applications for wounds by using, instead of gauze, unglazed paper (filtering or cigarette paper) first sterilized in a drying cupboard at 110° C., then rendered antiseptic by immersion in a solution of carbolic or boric acid, sublimate, etc. This can be used in layers or plugs, and is covered with thin sheets of gutta-percha,

CHEMICAL VEGETATION.

MANY of our readers have tried the old time classic experiments with solutions of different metallic salts, in which tin trees, lead trees, or silver trees were produced. A bar of zinc suspended in a dilute solution of acetate of lead precipitates metallic lead very beautifully, producing the effect of an inverted tree. This was the *Arbor Saturni*, or Saturn's tree of the old school. A silver tree is produced by an analogous method, and was called *Arbor Dianæ*, or Diana's tree. By the battery, aborescent growths of metal may be produced on an electrode, which, exhibited in the magic lantern especially, produce very striking effects.

By the use of silicate of soda, chemical precipitations can be brought about that still more closely resemble vegetation, in some cases corresponding in color with their model. Crystals of metallic salts immersed in a moderately dilute solution of this silicate, or water glass, as it is often called, send out shoots of precipitates varying from stalagmitic formations to the finest threads. Each of the available salts produces a highly characteristic appearance. In some cases the resemblance to the lower forms of plant life is remarkable.



Silicate of soda is made by combining silica with soda. Some form of silica is heated under pressure in a solution of caustic soda, when combination takes place, and a thick solution is obtained.

It is thus prepared in large quantities for commercial use, and can be purchased by the experimenter cheaper than he can make it. In composition it is precisely analogous to glass, but is soluble to almost any extent in water. Notwithstanding this, when once in the solid condition, its solution is only affected with difficulty. This gives it a certain value as a cement. Broken glass and china can be mended by it quite satisfactorily.

As sold, it is a very thick fluid, resembling strong starch solution. For the experiment in question, it must be diluted. A clear glass bottle or any suitable vessel may be used. It is about one-third filled with silicate of soda solution, and the remainder is filled with water. By shaking and stirring, the two must be mixed perfectly. In doing this, a good opportunity is afforded for observing the action of a liquid of low diffusive power. The silicate solution mixes with much difficulty with the water, gathering into a lump or drawing out into threads. It gives a good illustration of the difficulty we should be placed in, were there no power of diffusion in liquids. Without this power to help us, it would require a long

time and prolonged stirring to mix a cup of tea or coffee containing sugar and milk.

When the silicate solution has been thus diluted and mixed, a layer of sand, half or a quarter of an inch thick, is introduced into the bottle. It is best to pour it through a wide tube, reaching nearly to the bottom, to avoid discoloration of the fluid. Then crystals of different salts are embedded in the sand. The object of the sand is to hold the crystals in place. It plays no active part in the experiment. The crystals must not be covered with it. Sulphate of alumina, potash alum, protosulphate of iron, or "copperas," sulphate of copper, or "blue vitriol," are good salts to start with. Clear crystals, the size of a pea, should be selected, dropped into the bottle, and by a rod pressed down into the sand until half embedded.

The bottle is then put aside in a quiet place, where it will not be shaken. In a few hours the crystals will begin to sprout to a perceptible extent. The finest possible green filaments, resembling seaweed, will start up from the iron crystals in a nearly vertical direction. More slowly, similar filaments appear with the copper crystals as nuclei, while the alum sends up a most characteristic growth of pure white stalagmites. These three forms are represented in the cut. They can be identified by the description. The iron growth is greenish; the copper, light blue.

A curious difference in rapidity of growth will next be observed. The iron in the course of a few hours will have sent up its filaments several inches, while the copper and alum will be much more gradual in their progress. After awhile the iron filaments reach the surface, and another phenomenon shows itself. Where each filament touches the surface, it spreads out, and, as the iron oxidizes, loses its green color. After awhile it becomes too large for the floatative powers of the solution, and sinks until it is caught and sustained by some of the neighboring filaments. In this way the filaments become terminated with expansions, several of which appear in the illustration.

Many other salts can be tried, and separate growths produced in different bottles. In addition to the salts already named, sulphates of chromium, nickel, cobalt, and combinations of other acids and bases might be tried. To those who have never used silicate of soda, the behavior of this curious solution will, in itself, be a curious phase of the experiment.

To arrest the growths the silicate solution may be displaced with clear water. To do this, water must be poured in very gently through a tube reaching nearly to the bottom of the bottle. As the liquid overflows, the silicate will be carried away and water will take its place. Where it is not desired to preserve the growths, it is preferable to dispense with sand, as the process can be more closely watched without it. The only object of using sand is to hold the crystals in place where the bottle is subjected to movement.—T. O'CONOR SLOANE, Ph.D., in *Scientif. Amer.*

Alcohol from the Poppy.—A botanist of Pondicherry has discovered what he considers will prove a new and economical source of alcohol or brandy. It appears that the pulp which covers the poppy seed contains saccharine matter, which, after due fermentation and distillation, produces a kind of brandy of an agreeable flavor. As this pulp has hitherto been thrown away, the discovery, it is said, affords poppy planters an opportunity of realizing more profit from their crops, without a very great expenditure of capital,—*Monthly Magazine*.

SELECTIONS FROM THE HOSPITAL FORMULARY

OF THE DEPARTMENT OF PUBLIC CHARITIES AND CORRECTION OF THE CITY OF NEW YORK.

(Continued from page 173.)

101. *Mistura pro Delirio* (Bell. Hosp.).
"D. T. Mixture."

℞ Potassii Bromidi..... 3 i
Chloral..... 3 4
Tinct. Digitalis,
Tinct. Capsici,
Tinct. Zingiberis,
Spir. Ammoniac Arom.,
Syr. Aurantii Cort..... 55 fl. 3 i
Aque..... q. s. ad fl. 3 8

Dissolve and mix.
Dose: A tablespoonful.

102. *Mistura Sedativa* (I.).

℞ Chloral..... gr. 15
Ext. Conii Fl.,
Ext. Hyoscyami Fl..... 55 fl. 15
Aque..... q. s. ad. fl. 3 i

Dissolve and mix.
One dose, three times daily, after meals.

103. *Mistura Sedativa* (II.), (Char. Hosp.).

℞ Morphinae Sulphatis..... gr. 1
Aque Chloroformi,
Syr. Pruni Virgin..... 55 fl. 3 i

Dissolve and mix.
Dose: A teaspoonful. (Dr. A. Talbot.)

104. *Mistura Sodii et Ammonii Bromidi*.

℞ Sodii Bromidi,
Ammonii Bromidi..... 55 gr. 20
Tinct. Opil..... 55 fl. 5
Aque..... fl. 3 i

Dissolve and mix.
One dose, in restlessness of melancholia and the occasional excitement of primary and secondary dementia, especially when the general physical condition is poor.

105. *Mistura Valeriana Aetherea*.

℞ Aetheris Fortioris,
Tinct. Valeriana Ammon.,
Tinct. Quassiae..... 55 fl. 80
Aque..... q. s. ad fl. 3 i

Mix.
One dose.

106. *Mistura Acidi Salicylici* (Bureau O. D. P.).

℞ Acidi Salicylici..... gr. 80
Potassii Acetatis..... gr. 160
Glycerini..... fl. 3 4
Aque..... q. s. ad fl. 3 2

Dissolve and mix.
Dose: A teaspoonful.

107. *Mistura Antineuralgica* (Bureau O. D. P.). *Burt's Mixture*.

℞ Potassii Iodidi..... gr. 80
Tinct. Opil..... 55 fl. 80
Ext. Gelsemii Fl..... 55 fl. 45
Ext. Cimicifugae Fl..... 55 fl. 75
Syr. Sarsaparillae Comp..... fl. 3 6
Aque..... q. s. ad fl. 3 2

Dissolve and mix.
Dose: A tablespoonful every four hours, in muscular rheumatism and neuralgia affecting the chest. (Dr. S. S. Burt.)

E. MIXTURES FOR RHEUMATISM AND GOUT.

108. *Mistura Antipodagrica*. *Gout Mixture*.

℞ Tinct. Colchici Sem..... 55 fl. 15
Magnesii Carbonatis..... gr. 6
Magnesii Sulphatis..... gr. 80
Aque Menthae Pip..... q. s. ad fl. 3 i

Dissolve and mix.
One dose.

109. *Mistura Antirheumatica* (I.) (Bell. Hosp.).

℞ Potassii Acetatis..... 3 6
Vini Colchici Sem..... fl. 3 8
Aque..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A teaspoonful.

110. *Mistura Antirheumatica* (II.) (Char. Hosp.).

℞ Potassii Iodidi,
Sodii Salicylatis..... 55 3 2
Vini Colchici Sem..... fl. 3 2
Aque..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A tablespoonful.

111. *Mistura Colchici*.

℞ Vini Colchici Sem..... 55 fl. 15
Magnesii Carbonatis..... gr. 10
Spir. Aetheris Nitrosi,
Tinct. Conii..... 55 fl. 80
Aque Menthae Vir..... q. s. ad fl. 3 i

Mix.
One dose.

112. *Mistura Olei Gaultheriae* (Bell. Hosp.).

℞ Olei Gaultheriae..... 55 fl. 160
Mucilag. Acaciae..... fl. 3 2
Glycerini,
Aque..... 55 fl. 3 i

Mix.
Dose: One to two two teaspoonfuls.

113. *Mistura pro Rheumatismo* (Bell. Hosp.).

℞ Acidi Salicylici..... gr. 160
Glycerini..... fl. 3 2
Liq. Sodii Bicarb. satur..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A tablespoonful (containing twenty grains of salicylic acid).

F. MIXTURES FOR VENEREAL DISEASES.

114. *Mistura Biniodidi*.

℞ Hydrargyri Chloridi Corr..... gr. 1
Potassii Iodidi..... 3 2
Tinct. Gentian. Comp..... 3 2

Dissolve and mix.
Dose: A teaspoonful.
Note.—Tincture of Cinchona or other liquids containing alkaloids should not be combined in a mixture with biniodide of mercury, or with iodide of potassium and bichloride of mercury, since the alkaloids may, under certain conditions, be precipitated as iodo-hydrargyrites, and the patient might possibly take the whole precipitate with the last dose.

115. "*Mistura Bumstead*."

℞ Copaibae..... fl. 3 4
Tinct. Ferri Chloridi,
Tinct. Cantharidis..... 55 fl. 3 2
Glycerini..... fl. 3 4
Syrupi..... q. s. ad fl. 3 4

Mix.
Dose: A tablespoonful.

116. *Mistura Copaibae* (Bureau O. D. P.).

℞ Copaibae..... fl. 3 i
Liq. Potassae..... fl. 3 2 1/2
Spir. Aetheris Nitrosi..... fl. 3 1 1/2
Mucilag. Acaciae..... fl. 3 8
Glycerini..... fl. 3 6
Aque..... q. s. ad fl. 3 4

Mix.
Dose: Two teaspoonfuls. (Dr. E. A. Banks.)

117. *Mistura Copaibae Composita*.

℞ Copaibae..... fl. 3 6
Potassii Acetatis..... 3 1
Mucilag. Acaciae,
Syrupi..... 55 fl. 3 4
Aque..... fl. 3 4

Dissolve and mix.
Dose: A tablespoonful. (Dr. S. Alexander.)

118. *Mistura Hydrargyri Bichloridi* (Bureau O. D. P.).

℞ Hydrargyri Chloridi Corr..... gr. 1
Potassii Iodidi..... 3 2
Tinct. Gent. Comp..... fl. 3 4

Dissolve and mix.
Dose: A teaspoonful.

119. *Mistura Iodata* (Bureau O. D. P.).

℞ Potassii Iodidi..... 3 2
Syrupi Ferri Iodidi..... fl. 3 2
Tinct. Calumbae..... q. s. ad fl. 3 2

Dissolve and mix.
Dose: A teaspoonful.

120. *Mistura Iodidi et Sarsae* (Bureau O. D. P.).

℞ Potassii Iodidi..... 3 8
Syrupi Sarsaparillae Comp.,
Aque..... 55 fl. 3 i

Dissolve and mix.
Dose: A teaspoonful.

121. "*Mistura Lafayette*."

℞ Copaibae,
Spir. Aetheris Nitr.,
Tinct. Lavandulae Comp..... 55 fl. 3 4
Liq. Potassae..... fl. 3 1
Syrupi..... fl. 3 4
Mucilag. Acaciae..... q. s. ad fl. 3 4

Mix.
Dose: A tablespoonful.

122. *Mistura Potassii Iodidi* (Char. Hosp.).

℞ Potassii Iodidi..... 3 4
Syr. Sarsaparillae Comp.,
Tinct. Gentian. Comp..... 55 fl. 3 i

Dissolve and mix.
Dose: A tablespoonful.

123. "*Mixed Treatment*," Taylor (Bureau O. D. P.).

℞ Hydrargyri Biniodidi..... gr. 1
Potassii Iodidi..... fl. 3 2
Syr. Sarsaparillae Comp.,
Aque..... 55 fl. 3 i

Dissolve and mix.
Dose: A teaspoonful. (Dr. R. W. Taylor.)

124. "*Mixed Treatment*," Thompson (Bureau O. D. P.).

℞ Hydrargyri Biniodidi..... gr. 1
Potassii Iodidi..... 3 8
Tinct. Aurantii Dulcis..... fl. 3 1
Aque..... fl. 3 8

Dissolve and mix.
Dose: A teaspoonful. (Dr. Beverhout Thompson.)

125. *Syrupus Hydrargyri Biniodidi* (Bureau O. D. P.).

℞ Hydrargyri Biniodidi..... gr. 1 1/2
Potassii Iodidi..... gr. 80
Syrupi..... fl. 3 2

Dissolve and mix.
Dose: A teaspoonful. (Dr. E. A. Banks.)

G. DIURETIC MIXTURES.

126. *Haustus Diureticus* (Char. Hosp.).
Diuretic Drink.

℞ Potassii Acetatis..... 3 1
Spir. Aetheris Nitrosi..... fl. 3 1
Infusi Digitalis..... fl. 3 4
Glycerini..... fl. 3 2
Aque..... q. s. ad fl. 3 8

Dissolve and mix.
Dose: A tablespoonful.

127. *Mistura Buchu* (Bureau O. D. P.).

℞ Extr. Buchu Fl..... fl. 3 4
Tinct. Hyoscyami..... 55 fl. 3 8
Liquoris Potassae..... 55 fl. 90
Aque Menthae Pip..... q. s. ad fl. 3 2

Mix.
Dose: A tablespoonful.

128. *Mistura Buchu Composita* (Bureau O. D. P.).

℞ Extr. Buchu Fl..... fl. 3 4
Tinct. Hyoscyami..... fl. 3 2
Potassii Acetatis..... 1
Syrupi Zingiberis..... fl. 1
Aque..... q. s. ad fl. 3 4

Dissolve and mix.
Dose: A tablespoonful, in water, every four hours. In catarrhal cystitis. (Dr. W. B. Anderton.)

129. *Mistura Buchu et Scoparii* (Bell. Hosp.). "*Special Diuretic*."

℞ Potassii Acetatis..... 3 5
Spir. Aetheris Nitrosi..... fl. 4
Infusi Digitalis..... fl. 6
Infusi Scoparii..... q. s. ad fl. 3 10

Dissolve and mix.
Dose: A tablespoonful.

130. *Mistura Diuretica* (I.) (Bell. Hospital).

R Spir. Ætheris Nitrosi fl. 3 1 1
Tinct. Ferri Chloridi,
Tinct. Nucis Vomice aa fl. 3 1
Syrupi fl. 3 3

Mix.

Dose: Two teaspoonfuls. (Dr. W. H. Thompson.)

131. *Mistura Diuretica* (II.) (Char. Hosp.). "A-B-C Diuretic."

R Potassii Acetatis,
Potassii Bicarbonatis,
Potassii Citratis aa 3 1
Infusi Tritici Rep. ... q. s. ad fl. 3 4

Dissolve and mix.

Dose: A tablespoonful. (Dr. R. Guiteras.)

132. *Mistura pro Cystitide* (Bell. Hospital). "Cystitis Mixture."

R Liquoris Potassæ fl. 3 1
Mucilag. Acaciæ fl. 3 4
Tinct. Hyoscyami q. s. ad fl. 3 2

Mix.

Dose: A teaspoonful.

133. *Mistura pro Cystitide*, "Polk" (Bell. Hospital). "Cystitis Mixture, Polk."

R Potassii Bicarbonatis 3 1
Tinct. Hyoscyami fl. 3 1
Infusi Buchu q. s. ad fl. 3 6

Dissolve and mix.

Dose: A tablespoonful. (Dr. W. M. Polk.)

134. *Mistura Tritici Repentis* (Bell. Hosp.).

R Potassii Acetatis gr. 80
Infusi Tritici Rep.,
Aque aa fl. 3 4

Dissolve and mix.

Dose: A tablespoonful.

II. EMULSIONS.

135. *Emulsio Olei Gaultheriæ*.

R Olei Gaultheriæ fl. 3 2
Acaciæ pulv. 3 1
Syrupi fl. 3 1
Aque q. s. ad 3 2

Pour the oil of gaultheria into a clean and perfectly dry 2-oz. vial, and shake it about, so that the whole of the interior surface may be moistened by the oil. Then add the acacia, and shake again. Next add the syrup and enough water to make 2 fl. oz., and mix by agitation.

Dose: A fluidrachm, containing 7½ minims of the oil, repeated more or less frequently.

Note.—On standing, this mixture (which is not a true emulsion) will gradually separate, but it may be restored by shaking.

(To be continued.)

Germanium.

CLEMENS WINKLER, of Freiberg, who discovered the new element germanium (which was found to accompany antimony in one mineral with such persistence that its identity as a separate element remained in doubt for some time), has ascertained that it agrees in atomic weight, valency or atomicity, lustre, brittleness, fusibility, etc., exactly with the hypothetical *ekasilicium* predicted by Mendelejeff and Lothar Meyer as a link required to fill up an existing gap in the periodic system of elements. The correctness of the theory of the existence of such a system has thereby received an important additional proof.

Clarifying Alcoholic Liquids.

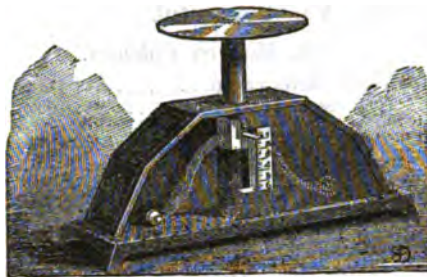
THE following mixture is recommended by Dieterich in the *Pharm. Centralh.*:

White of Egg 2 parts
Sugar of Milk 2 "
Starch 1 part

For every quart of liquid take about 75 grains of the above mixture, shake repeatedly, set aside some days in a cool place, and filter.

SPRING BALANCE.

THE spring balance here shown is very simple in construction. In the centre of the case is a vertically sliding block provided with a pointer projecting through a vertical slot in the front of the casing. At the edge of the slot is a graduated scale. A rod projecting from the block through the top of the casing carries a plate on its upper end for receiving the article to be weighed. Secured to the block is a flat curved or bow spring, at the ends



Watt's spring balance.

of which are rollers that run on the upper surface of the base. When an object is placed on the pan, it presses the rod downward, and thereby the spring is compressed more or less, its ends separating. The pointer shows the weight of the article. When the article is removed the spring contracts and moves the pan upward until the pointer is at the top of the slot.

This invention has been patented by Mr. William R. Watt, of Somerville, Tenn.—*Sci. Amer.*

PORTABLE BLAST FURNACE.

THE blast furnace here illustrated is the invention of Mr. John Clegg, of 19 Richmond street, Providence, R. I., and is primarily intended for the use of plumbers, in melting lead and solder, but is capable of application to laboratory uses. It consists of a cast-iron fire-pot, for the reception of charcoal, secured to a metallic framework and base. Into an aperture in the



Clegg's portable blast furnace.

bottom of the fire-pot projects the neck of a blower casing. Suitably mounted cog-wheels and pinions, operated by a crank-handle, revolve the fan in the blower very rapidly. The powerful current of air thus produced is directly delivered on the charcoal in the pot, and a high degree of heat is rapidly attained.—*Scientific American.*

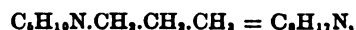
Explosion of Chlorate of Potassium.—A curious explosion occurred in Brookline, Mass., recently, when some lozenges containing chlorate of potassium exploded in the pocket of a gentleman, who dropped his watch upon them quickly. [At least this was stated to have been the cause. We have strong doubts about it.—ED. AM. DRUG.]

Coniine, the First Alkaloid Prepared by Synthesis.

THOUGH thousands of organic substances have already been prepared synthetically, some of them of very complex composition, yet up to the present year, no chemist succeeded in preparing any alkaloid synthetically. It is true that alkaloids could be split up into several other bodies, and these be re-united again so as to reproduce the alkaloid (as in the case of atropine). But this is only a partial synthesis. Complete synthesis is a process which permits starting from the very elements and building the body up step by step. Naturally, this round-about way need not be exactly followed, all that is required being this, that no substance be used for building up the final compound which itself could not, if it were desired, be artificially produced. Coniine, or rather a closely allied body, had been obtained some time ago, but though it was apparently identical with the natural alkaloid in all important respects, yet it was not absolutely identical with it. Finally, however, a way was found to accomplish the desired result. The discoverer is Prof. A. Ladenburg, in Kiel, as was to be expected from the drift of his previously published works.

At the meeting of the German Naturalists and Physicians, held at Berlin in September last, he read a paper on this subject, from which we take the following:

The synthesis of coniine is based upon the fact that picoline (or methylpyridine) is condensed with paraldehyde. Water is thereby removed, and an alpha-allylpyridine is produced. This body is reduced by treatment with sodium and alcohol, whereby 8 atoms of hydrogen are taken up, and the *alpha-propyl-piperidine*,



produced, which is a base having the same constitution as coniine, and agrees with the latter in chemical and physiological respect completely. But there is still a difference.

Natural coniine is optically active, turning the plane of polarized light to the right. But the *propyl-piperidine* is optically inert. Indeed, it was not to be expected otherwise, for up to the present no optically active body had been obtained by synthesis. An explanation of this fact is supposed to be this, that all these substances exist in two modifications, one turning to the right, and the other to the left; and that, when the body is prepared synthetically, an equivalent amount of each is formed, thus neutralizing each other in polarity. Now, Pasteur has previously shown that it is possible to cause the separation, from such a mixture, of one or the other of optically active bodies, and one of these methods has led to success in the case of coniine. There are two tartaric acids, one turning polarized light to the right, the other to the left. The first is known as dextro-tartaric, and the second as lævo-tartaric acid. Ladenburg prepared the dextro-tartrate of the alpha-propyl-piperidine, and introduced into the supersaturated aqueous solution of the salt a small crystal of dextro-tartrate of natural coniine. Upon this crystal as a nucleus only, the dextro-tartrate of right-polarizing propyl-piperidine crystallized out, while the dextro-tartrate of the left-polarizing base remained in solution. Hence one single operation succeeded in furnishing both optical varieties of the base. That which turned the plane of polarization to the right was now found to be absolutely identical with the natural one. Even the angle of rotation of the polarized light was identical in both.

This is a grand step forward, and does great honor to the discoverer,

who is, however, just enough in acknowledging that he would not have succeeded had he not been able to base his researches upon the masterly investigations of Prof. A. W. Hofmann, who first cleared up the constitution of coniine.

Prof. Hofmann, at the conclusion of the reading of the paper, stated that it is possible to convert *active* coniine into the optically inactive. It is first distilled over zinc-dust, whereby it loses six atoms hydrogen, and is changed to conyryne, which is completely inactive. When this is again reduced to coniine, the latter base is found to be also inactive. — After *Deutsch. Chem. Zeit.*

Ulexine.

ULEXINE was the subject of a paper read by Mr. A. W. Gerrard before the British Pharmaceutical Congress in August. The first notice respecting it appeared in the *Pharmaceutical Journal* in August, 1885, by the same author, who had extracted it from seeds of *Ulex Europæus*, or Furze, and showed it to be a powerful organic base. It is contained, in smaller proportion, in the bark and young tops of furze. When the seeds are chewed they cause a peculiar sensation in the mouth and slight numbness of the tongue, and it was this property which led Mr. Gerard to undertake their examination. Experiments to show the effects of the alkaloid have thus far been limited to frogs, in which it caused paralysis.

To obtain it, 12 kilograms of the seed were percolated to exhaustion with 84% alcohol; this, by distillation, gave 916 grammes of extract, which separated, on standing, into a porous, brittle resin, intermixed with much fixed oil. The extract was warmed and shaken with 6 successive liters of 1 per 1,000 hydrochloric acid; the separated mixed acid fluids were carefully neutralized with sodium bicarbonate, filtered and evaporated to 1 liter. After standing 24 hours, the clear liquid was decanted from the resin and further evaporated to 500 C.c., and, when cooled, treated with caustic soda in excess, and then shaken with 3 successive portions of chloroform. The separated and mixed chloroform was well shaken with hydrochloric acid, which gave ulexine in solution as a hydrochlorate; and crystals formed on evaporation.

To obtain free ulexine in a pure state, the hydrochlorate is several times recrystallized from a watery solution, powdered, washed with pure alcohol, re-dissolved in water, and the base extracted by the aid of soda and chloroform. The latter having been allowed to evaporate spontaneously, compact masses of long crystals are formed, but a granular powder results from rapid evaporation on a water-bath. — *Pharm. Jour.*

Note on Kumys.

FOR the manufacture of kumys, cow's milk may be used in place of mare's milk, if the greater portion of the cream is first removed; as mare's milk contains 5.3-7.26 per cent of milk-sugar, and cow's milk only 4.8 per cent, it is sometimes advisable to add some milk-sugar to the latter.

The mean composition of eight samples of kumys from mare's milk is given by H. W. Wiley as: carbonic anhydride, 0.83; acidity, as lactic acid, 0.47; alcohol, 0.78; nitrogen, 0.449; albuminoids, 2.56; fat, 2.08; milk-sugar, 4.38; water, 89.32. These samples, prepared in Indianapolis, thus contain less alcohol and more fat than samples that have been analyzed previously. — After *Amer. Chem. Journ.*

The Oil of Indian Corn is recommended by Curtman as a substitute for castor oil.

MEASURING THE VOLUME OF SOLIDS.

R. KLEIMANN, of Halle, on the Saale, has designed an apparatus for approximately measuring the volume of solid bodies, which consists of a cylindrical vessel of sheet copper, about 4 inches in diameter and 2½ inches high, surmounted by a conical top, from which projects a copper neck provided with a graduated glass tube. The bottom is attached by means of a bayonet catch and bears upon the centre of its upper surface a sharp pin to support the object to be measured. The apparatus having been carefully

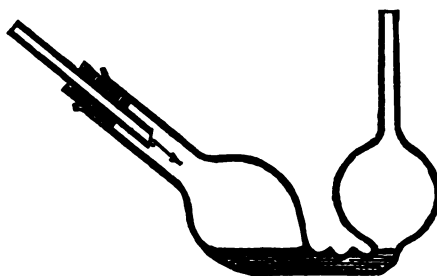


Apparatus for measuring volume.

filled with sifted fine dry sand to the lower mark in the scale, the sand is removed from the cylinder by inverting it (after closing the upper orifice of the neck); the object is affixed to the point and the sand is again replaced. The difference between the two levels on the graduated tube indicates the bulk of the object. The advantage of the apparatus consists in the rapidity with which it can be manipulated, the results obtained being within about one-half cubic centimeter of the true value. — After *Zeitschr. f. Instrum.*, 1886, 277.

AN IMPROVED RECEIVER.

WHEN a gas is given off, during a distillation, and is to be caught in some liquid intended to retain it, the mere passage of the current of gas through a column of the liquid, without agitation of the latter, will sometimes result in loss. This may be guarded against, according to R. Bensemann, by using as a receiver one of the well-known absorption vessels designed by Will and Varrentrap. This is charged to the level shown in the cut with the absorbing liquid—for in-



Bensemann's receiver.

stance, with sulphuric acid when gaseous ammonia is passing over—and the wide end of the receiver is connected directly with the end of the condenser. The current of gas is compelled to pass the column of liquid with some pressure, and thereby causes a constant disturbance and agitation of the liquid, and a more complete absorption of the gas. At the same time, the liquid cannot be aspirated back into the retort. — *Rep. d. Anal. Chem.* No. 33.

Disinfecting Mouth Wash.—Thymol, gr. v.; Benzoic Acid, 3ss.; Tincture of Eucalyptus, 3iij.; Water, Oi.

Note on Hydrochlorate of Cocaine.

MR. BIGNON, pharmacist and professor of Chemistry at Lima, Peru, has sent a communication to the *Archives de Pharmacie* (October 5th, 1886), from which we take the following:

"There is much difference of opinion among authorities regarding the best method to ascertain the therapeutic value of any given sample of cocaine. This difference arises chiefly from the varying composition of the particular salts employed. In order to obtain comparable results, it is necessary to employ the alkaloid, and to abandon the use of the commercial salts altogether, 'which are very variable in composition, and subject to numerous sophistications, particularly in other countries than France.' [We do not at all agree with the author in this. We have heard of no sophistication in this country, at least, and it would pay but poorly to commit such, as the very first trial would be sufficient to condemn the article.—ED. AM. DR.] If physicians were to prescribe the pure alkaloid, they would be better able to judge of the effect of a given quantity of the drug.

"The *amorphous* hydrochlorate of cocaine existing in commerce is hygroscopic, slightly acid, and of a very variable composition. It gradually suffers decomposition, even when dry, and never contains, after one month's interval, the same quantity of cocaine.

"The solutions of all salts of cocaine with mineral acids, and almost all those with organic acids, unless they are absolutely neutral, are liable to a peculiar fermentation which develops abundant fungi or mould. This is particularly the case with solutions of the hydrochlorate at temperatures between 25° and 28° C. (77° to 82.4° F.).

"But the *benzoate of cocaine*, or, rather, a solution of cocaine in benzoic acid, does not suffer this decomposition, nor does it develop the above-mentioned mould. This shows that it is superior to other salts."

The author next proceeds to give his method of examining cocaine to ascertain whether it is *therapeutically* pure:

1. Dissolve the cocaine in seven times its weight of cold benzin. The solution must be transparent, colorless, and without insoluble residue.

2. Agitate the benzin solution, twice successively, with its own volume of water containing five per cent of hydrochloric acid, and precipitate the aqueous solution, when separated, with an excess of carbonate of sodium. On dissolving the dry precipitate in ether, and evaporating the ethereal solution, the residue should have the weight of the cocaine taken originally, if it was pure.

Should it be suspected that other alkaloids are mixed with the cocaine, it is best to use another method of examination, namely, one in which the cocaine shall be entirely destroyed, while the other alkaloids remain unaltered. This is accomplished by dissolving a carefully weighed quantity of the suspected alkaloid in water rendered alkaline with carbonate of sodium. At the end of four hours, an excess of the carbonate is added, so as to precipitate all the alkaloids, and the precipitate then dissolved in ether. The weight of the alkaloids left after evaporation of the ether represents the quantity of foreign alkaloids, while all the cocaine has been destroyed.

The author states that the cocaine obtained by his process [with benzin and carbonate of sodium, which, by the way, is not original with the author.—ED. AM. DR.] is *therapeutically* pure, and is of almost unvarying composition. It contains all the anæsthetic virtues of coca, and "its anæsthetic power is greater than that

of chemically pure cocaine." It contains only about 80 per cent of crystallizable cocaine, and the other 20 per cent consist almost entirely of a poisonous and odorous substance possessing all the chemical and physiological effects of crystallized cocaine, differing from it only in its physical properties.

NOTE OF ED. AM. DR.—While the author may be perfectly correct in his statements regarding modes of testing, and therapeutic effects of the cocaine prepared according to this method, it appears rather strange that he should declare this impure cocaine to be more active than the pure crystallized alkaloid. Might there not be some connection between this remarkable statement and the fact that crude cocaine is manufactured at Lima and exported to Europe and this country, in both of which the crystallizable alkaloid alone is now regarded as the only reliable standard of valuation, the non-crystallizable portion being held at a discount.

Pyrophosphate of Iron Water.

A DILUTE solution of pyrophosphate of iron in water has long been used as a ferruginous tonic in cases of chlorosis, or other conditions requiring iron.

A correspondent of the *Zeitschrift des Oesterr. Apoth. Vereins* sends the following formula:

Solution of Chloride of Iron....	13 parts.
Pyrophosphate of Sodium.....	30 "
Distilled Water.....	1,000 "

[The original has Solution of Chloride of Iron, 20 parts; but, in substituting, as we have done, the U. S. solution, which is much stronger, 13 parts will answer for this.—ED. AM. DR.] Mix the iron solution with 500 parts of the water, and dissolve the sodium salt in the rest of the water. Add the second solution to the iron solution until the precipitate first formed is redissolved. Fill the liquid in $\frac{1}{2}$ pint and pint bottles; cork well, and keep in a cool place.

[If this solution is prepared with the addition of some sugar and a moderate amount of pleasant aromatics, and if it be, moreover, charged with carbonic-acid gas, a very agreeable iron tonic may be produced. It will be preferable, in this case, to diminish the proportion of solid constituents.]

Purified Storax.

DIETERICH gives the following formula for purifying commercial storax.

Introduce 1,000 parts of liquid storax and 750 parts of ether into a suitable flask, shake until the storax is dissolved (that is, until the storax and ether form a homogeneous mixture). Then add 100 parts of dry sulphate of sodium in powder, shake thoroughly, and set the flask aside. The aqueous liquid collecting at the bottom is drawn off, and this is repeated as long as any aqueous liquid is deposited. The ethereal solution is then filtered in a cool place and in a covered funnel, the ether is distilled off in a water-bath, and the residue is the purified storax.

Average yield, 800 to 860 parts of the latter.—After *Pharm. Centralh.*

Alcohol in Arctic Lichens.—The extreme richness of the milk of the reindeer, that feed on the wild mosses of Sweden, has led to an examination of the moss as an article of food. These researches have resulted in the establishment of a number of moss dealers in Russia and Sweden, and a prosperous and growing interest has been developed. The moss employed yields on an average as much alcohol as good grain, and three times as much as potatoes. The supply is practically inexhaustible, as it is spread over vast tracts, extending from the Baltic to Behring Straits.

Test for Bromides.

SODIUM carbamate is immediately decomposed by sodium hypobromite, but not by hypochlorite. Therefore when sodium bromide is added to a solution containing sodium carbamate, hypochlorite and hydroxide (soda), nitrogen is evolved; this is shown to be due to the intermediate formation of hypobromite, hence a small quantity of bromide will decompose a large quantity of carbamate. The initial rate of the action is more rapid the greater the mass of the bromide, although the final result is the same with both weak and strong solutions. This reaction forms a delicate test for bromine in presence of unlimited quantities of chlorides, hypochlorites, etc. For this purpose two equal quantities of the test mixture are shaken, one with the suspected liquid, one with an equal volume of distilled water; after resting some time, if bromine is present gas will be seen coming off in the one and not in the other, or at least not to the same extent. In this way it is easy to detect one part of bromine in 6,000 of water. Iodides give a slight action, probably due to traces of bromine as impurity. Sodium carbamate may be prepared by dissolving ammonium carbamate* in a strong solution of soda, and allowing the mixture to stand over sulphuric acid under a bell-jar, or by treating ammonium carbamate with a mixture of sodium hypochlorite and hydroxide.—*J. Chem. Soc.*

Curious Effect of Iodoform upon Silver.

A FEMALE patient of Dr. Poncet, of Lyon, to whom he had been applying iodoform dressings, reported to him that all soups and other diet which she ate with a silver spoon had a very disagreeable taste, and that the spoon itself had a garlicky odor.

On examining this matter, Dr. Poncet found that any object of silver when brought in contact with iodoform actually gave out a disagreeable odor when rubbed. If a piece of silver is touched with the fingers, after they had been in contact with iodoform, the silver will have acquired a nauseous odor, resembling garlic, which becomes noticeable as soon as the piece is rubbed with the fingers or with a rag. The odor is strongest if iodoform has actually been in contact with the silver.

The following experiment demonstrates the great volatility of iodoform, and, at the same time, its great affinity for silver. Place two pieces of silver into a room some distance from each other. Upon a table, situated not too close, place a bottle containing a few grammes of iodoform, the stopper of which is left out, and leave them in this condition for eight hours. At the end of this time, the silver will have acquired the characteristic odor.

Copper and iron are not affected in this manner. Consequently, Dr. Poncet recommends that physicians treating their patients with iodoform dressings should caution them against using silver spoons.

This curious phenomenon may also be used, according to Dr. Poncet, to ascertain whether any patient treated with iodoform is fully under its influence. It is then only necessary to let the patient touch a piece of silver with his saliva, and then to rub the piece with a rag. If iodoform was absorbed, the characteristic odor will be noticeable. This is called by Dr. Poncet the silver test.—After *Arch. de Pharm.*

NOTE OF ED. AM. DR.—We have made a few experiments, and find the facts as stated by Dr. Poncet. It is difficult to describe the odor. But it

* This may be obtained by treating ordinary carbonate of ammonium with alcohol. The alcohol extracts carbamate of ammonium. See U. S. Pharm. under *Ammonii Carbonas*.

seems to us that this is due to one of the decomposition products of iodoform, which latter is probably slowly decomposed by the metal.

Phenomena in Filtration.

GERSTMANN, of Berlin, has made experiments in filtering saline solutions through a system of capillary tubes, such as are, for instance, afforded by porous clay-cells, and has found that there passes through the bottom at first a liquid containing less saline matter than the original solution. This is followed by one a little more concentrated, until finally the saline solution passes through unchanged. This phenomenon is explained by supposing that a crust of the salt is at first formed along the wall of the capillary tube, whereby the solution becomes more dilute. Next there is formed a lining of the other constituent, viz., the water, in consequence of which the exuding solution becomes again denser. Finally, the wall of the tube ceases to have any influence upon the liquid, so that the solution can finally pass unchanged.

These results were communicated by the author in a paper read before the Convention of German Naturalists and Physicians at Berlin. From the abstract of the paper which has reached us, we cannot tell whether the author was aware of the experiments and papers of Prof. J. U. Lloyd, referring to this same phenomenon (*Proceed. Amer. Pharm. Assoc.*, vol. 32 [1884], p. 410 sqq.).

Salol.—A writer in the *Philadelphia Medical Times* says that Prof. von Nencki, of Berne, the discoverer of this substance, perceived that he was dealing with an antiseptic substance of a novel character which seemed destined to take the place of salicylate of sodium in the treatment of acute rheumatism. Given in the different varieties of rheumatismal affections, it has met, we are told, with greater success than salicylate of sodium. It has also been tried in phthisis, when it brought down the temperature from 104° F. to 98.8° F., or 2° below normal. It is advised to commence with small doses, and would perhaps prove serviceable in diabetes in place of phenol, and as a local antiseptic in intestinal catarrh. One of the most important uses of salol, says the writer quoted, will most likely be in catarrh of the bladder. Urine in which a little salol was placed kept without decomposition for over six weeks, and in all cases the patients' urine became completely aseptic.

Salol is almost insoluble, and its use as an antiseptic in place of iodoform, the *American Journal* says, has already given such results that it may be able to replace not only the last-named substance, but the highly dangerous corrosive sublimate. Whether salol destroys bacteria or not may still be an open question, but we are assured that it certainly prevents their development, and is thus suitable for dusting over wounds.—*Monthly Magazine*.

Nursery Hair Lotion.

Quillaia bark.....	1 oz.
Eau de Cologne.....	1 "
Rectified Spirits.....	3 "
Water.....	7 "

Digest for seven days, and filter into a mixture composed of the following:

Almond Oil.....	3 oz.
Solution of Ammonia..	1 oz.
Tincture of Capsicum.....	3 drs.
Jockey Club.....	$\frac{1}{2}$ dr.
Camphor Water.....	to 20 oz.

Mix by shaking. The oil may be omitted, and glycerin used in its place. This lotion is to be used for washing the children's heads, and carbolic soap should be used along with it.—*Chem. and Drugg.*

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EDITORIAL.

THE Swiss Government appears to have a novel and ingenious way of providing medical supplies for its troops without putting its hands too deep into its pocket. When the annual manoeuvres are about to take place, the pharmacists of a city in the neighborhood are usually given the chance of making their fortunes in this way. A contract is entered by them with the government medical service, that they will furnish all the medicines required for man and beast. When the manoeuvres are over, they are compelled to take back, at a discount of twenty-five per cent, everything that is left over "and still in a condition to be used." In what condition the goods generally come back can be readily imagined, if it is remembered that some of them have been packed—according to regulations—in styles of packages altogether unsuitable to rough handling. Recently, the pharmacists of Freiburg had been called upon by the Surgeon-General of the Swiss army to furnish the medical supplies. But they, one and all, refused to accept the conditions that they must take back the leavings. Whereupon the said Surgeon-General, Dr. Ziegler, of Berne, publishes an edict in which he orders that the supply of medicines has been conferred upon a pharmacist of Berne, and that no payment should be made to any pharmacist of Freiburg for any medicines whatever. But the climax is capped by paragraph 3 of his ukase, which reads as follows:

"The sick of the garrison at Freiburg [which is some distance from Berne] whose condition necessitates the employment of medicines other than those carried in the ambulances are to be at once transferred elsewhere." Here is a state of things! The pharmacists are supposed to sell to government a lot of drugs, simple and compound, at tax-price. After a time, they are compelled to buy back, with twenty-five per cent discount, what is left, for the use of the dear public,

which ought to consider itself honored by being permitted to consume the leavings of the noble defenders of the country. And if the pharmacists refuse these conditions, the soldiers who need medicines not carried in the army medicine chests, must be carried to some other place where the medicine may be procured from a pliable pharmacist willing to accept the government's terms.

Had we been told of such a condition of things existing in the Fiji Islands, or in Ashantee, we might not have been surprised. But that our sister republic should stoop to such practices is a thing we cannot comprehend.

To judge from a recent publication by the Department of State, the system pursued, for five years past, of publishing a monthly volume of consular reports has excited much comment in the British consular service, and is likely to lead to the adoption by it of this American scheme. Those who have not taken the trouble to become familiar with this series of Government publications cannot be aware of how important it is from a commercial point of view, and interesting to the general reader. It ought to be found in every public library. Indeed, when it was first issued, it was greatly in demand as a text-book for classes in reading in some public schools. We have frequently made use of it as a source of information especially demanded by the drug trade, but there have been many reports for which we have not been able to find space, but which would well repay those who will take the trouble to read them.

THE *Lancet*, of Sept. 18th, quoting from the address by Mr. Thomas Greenish before the British Pharmaceutical Conference, says that Mr. Greenish referred at some length to the present unsatisfactory condition of the art of pharmacy. He stated that the British Pharmacopoeia in no way represented the advance which had been made in their department of science in the long interval which had elapsed between its publication and the preceding issue. It was simply a collection of fragmentary papers, with an absence of the applied practical knowledge necessary for the proper elaboration of such a work. The result had been most unfortunate, and, excepting in some of the large centres and more important provincial towns, pharmacy had no existence for pharmacists, the whole of the work being absorbed by medical men, to the detriment of the interests of those whose legitimate calling it was supposed to be. Prescriptions were now so rare that, when one made its appearance once a fortnight or thereabout, there was quite an excitement to see the curious interruption to their ordinary duties. There was a growing evil which might be called "wholesale prescribing for the medical profession." Proprietary preparations, for the most part "factory made," were thrust upon doctors and unblushingly advertised, sapping the foundations of pharmacy and depriving the pharmacist of the legitimate practice of his calling. Chemists were harassed by the demand for these proprietary medicines.

A RECENT communication from Mr. H. Shillinglaw, of Melbourne, informs us of a conference held by delegates from New South Wales, New Zealand, South Australia, Tasmania, and Queensland, on the 27th, 28th, and 29th of October. The subjects discussed were a uniform system of pharmaceutical education, embracing a preliminary examination similar to the one required in Great Britain; apprenticeship of four years; a course of study

based upon that followed in Great Britain; the organization of examining boards; the subjects of examination; uniformity in pharmaceutical legislation, and poison laws; interchange of certificates, and the sale of proprietary remedies.

The Kings County Pharmaceutical Society has inaugurated a second course of lectures for drug-clerks, at No. 120 Myrtle Avenue, Brooklyn, at 2:30 P.M., on the dates mentioned below. The lecturers are all members of the Society, and the topics are of decided and practical interest. The prizes offered and a low charge for matriculation are calculated to stimulate an interest on the part of students. The course is announced as follows: Nov. 11th, The Field of Pharmacy, L. T. Perkins. Nov. 18th, Elementary Lessons in Botany, W. P. DeForest. Nov. 24th, General Nature of Poisons and why they kill, C. E. de La Vergne, M.D. Dec. 2d, The Chemical Elements, R. G. Eccles, M.D. Dec. 9th, Proximate Principles and Constituents of Drugs, Wm. P. DeForest. Dec. 16th, Antiseptics, Deodorizers, and Disinfectants, Geo. R. Fowler, M.D. 1887, Jan. 5th, Methods of Extraction, Reperculation, etc., E. R. Squibb, M.D. Jan. 13th, Lower Forms of Plant Life, R. G. Eccles, M.D. Jan. 20th, Chemistry as Related to Pharmacy, Prof. F. W. Hooper, of Adelphi Academy. Jan. 27th, Toxicology, L. D. Sheets, M.D. Feb. 3d, Chemistry, with Experiments, Mr. J. C. Cardwell. Feb. 10th, How to Manage your Prescription Counter, C. R. Paddock. Feb. 17th, The Microscope and some of its Uses in Pharmacy, Jos. H. Hunt, M.D. Feb. 24th, "Standards," and how to be Accurate, L. E. Nicot. March 3d, Reasons Why in Pharmaceutical Chemistry, Luther F. Stevens. March 10th, Drugs containing Alkaloids and Glucosides, Wm. P. DeForest. March 17th, Acid and Corrosive Poisons, Chas. E. de La Vergne, M.D. March 24th, Manufacture of Galenicals, L. T. Perkins. March 31st, Uses of Chemistry, R. G. Eccles, M.D. April 7th, Apparatus and How to Use it, Thos. D. McElhenie. April 14th, Mineral and Vegetable Drugs, Wm. P. DeForest. April 21st, General Review of the winter's work, L. F. Stevens.

Chapter 390, Laws of 1886.

An Act to amend section four hundred and four of the Penal Code. Passed May 14th, 1886; three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Section four hundred and four of the Penal Code is hereby amended so as to read as follows:

§ 404. A person who sells, gives away, or disposes of any poison or poisonous substance (except upon the order or prescription of a regularly authorized practising physician) without attaching to the vial, box, or parcel, containing such poisonous substance, a label with the name and residence of such person, the word "poison," and the name of such poison, all written or printed thereon in plain and legible characters; and a person who, after the first day of January, eighteen hundred and eighty-seven, sells, gives away, or disposes of, or offers for sale any sulphate or other preparation of opium or morphine, except paregoric and those preparations containing two grains or less of opium or morphine to the ounce, without attaching to the bottle, vial, box, or package containing such sulphate or other preparation of opium or morphine [note the curious chemistry of the legislators.—Ed. AM. DR.], a scarlet label lettered in white letters,

plainly naming the contents thereof, with the name and residence of such person, is guilty of a misdemeanor.

§ 2. This act shall take effect immediately.

THE Toronto, Canada, College of Physicians and Surgeons has lately made a rule requiring of candidates for its degree a thorough knowledge of pharmaceutical manipulations and the preparation of Galenical compounds. Trinity Medical College has also made a change in its mode of teaching pharmacology, the course embracing eighty lectures on materia medica and therapeutics, forty lectures on pharmacy, and twenty lectures on prescribing.

The new building for the Ontario College of Pharmacy is nearly completed, and the class this year numbers fifty-five students.

A LOCAL journal says that the total production of peppermint oil in Wayne County, N. Y., during the past season has been about twice that of any season for over ten years. The average of the plants has been the largest ever known in America, and this accounts for the gradual decline in the value of oil. The extent of the peppermint yield was underestimated when the market opened in August.

THE Norfolk and Portsmouth (Va.) Pharmaceutical Association have fitted up a meeting-room in Norfolk in connection with which they have established a reading-room and a museum of rare crude drugs, chemicals, apparatus, etc., which are open at all times to all pharmacists and physicians. Contributions of books, journals, museum specimens, etc., will be received with gratitude by the Secretary, J. W. Thomas, Jr.

The San Francisco Branch of the N. R. D. A. has elected as its officers: *President*, Val. Schmidt; *Secretary*, C. A. Bayly; *Treasurer*, J. H. Dawson.

Dr. Alexander von Butlerow, Professor of Organic Chemistry in the University of St. Petersburg, is dead.

The Blakiston's Physician's Visiting List for 1887 is now in its thirty-sixth year of publication, and contains several improvements upon its preceding editions. It is the visiting list which is most extensively used among physicians, and should be kept in stock by pharmacists in places where book-stores do not render it unnecessary.

BAD EFFECTS OF DRESSINGS OF MERCURIC CHLORIDE.—At the Pennsylvania Hospital, two resident-surgeons have been absent on sick-leave, on account of the effects of absorption of the drug in their daily handling of corrosive-sublimate dressings.—*Med. Times*.

THE report made by the Academy of Medicine on the consumption of alcohol in France is not encouraging. Since the law of 1880, which abolished licenses, drinking shops have enormously increased. A committee of the Academy has suggested, as a remedy, that alcohol should be made a State monopoly.

A BIT of soft paper is recommended by an English doctor for dropping medicines into the eye, as being equally effective as brushes, glass droppers, etc., and far less likely to introduce foreign substances.

Eulyptol.

EULYPTOL [or eulylyptol, according to other sources] is a name given by Dr. Schmeltz, of Nice, to a mixture of

Salicylic Acid..... 6 parts
Carbolic Acid 1 part
Oil of Eucalyptus 1 "

This is stated by the author to be a very effective antiseptic.

Given internally, it is reported to be borne in quite large doses, as much as 120 to 150 grains having been given in one day. Dr. Schmeltz uses it with success in articular rheumatism; it produces much less humming in the ears than salicylate of sodium.—*Bull. de Thérap.*

Solidified Liniments.—The application of liquid liniments is often a matter of some difficulty when the medicament is to be brought in contact with some part of the body in the upright position, but this does not seem up to the present to have attracted the attention of pharmacologists. The *Lancet* suggests the solidification of liniments by the addition of some gelatinizing material, so as to enable them to be employed "with some approach to definiteness of quantity and to the greater convenience of the patient."

Purification of Vegetable Oils.

CHLORIDE of zinc has recently been proposed, by Dr. Moriz Herzog, as an agent for purifying vegetable oils.

When operating on the large scale, the following procedure is recommended:

The crude oil is mixed with one-half per cent of a syrupy solution of chloride of zinc (sp. gr. 1.850) and thoroughly stirred. At first it acquires a yellowish-brown, afterwards a dark-brown color, and, after forty-eight hours, or after longer standing, dark-brown flakes settle at the bottom of the mixing vessel. The oil is next mixed with water and heated, then allowed to settle, afterwards steam blown through it, and the oil finally permitted to separate from the aqueous liquid. It will then have acquired a light color and be almost free from impurities. A further treatment with steam will produce a still finer quantity of oil.—*Neueste Erf. und Erf.*

A New Delicate Reaction for Prussic Acid.

G. VORTMANN applies the reaction discovered by Playfair, viz., the violet color produced when alkali sulphides are brought in contact with nitroprusside of sodium, for the detection of prussic acid, in the following manner:

The liquid to be tested for hydrocyanic acid is mixed with a few drops of solution of nitrite of potassium, two to four drops of solution of ferric chloride, and enough diluted sulphuric acid to convert the yellowish-brown color of the basic ferric salt at first formed into light yellow. The solution is now heated to incipient boiling, cooled, mixed with a few drops of ammonia to precipitate the excess of iron, filtered, and the filtrate mixed with a few drops of highly diluted, colorless sulphide of ammonium. If hydrocyanic acid was present, a fine violet color will appear, which will change in a few minutes to blue, green, and finally yellow. If the liquid shows only a bluish-green tint, only traces of the acid are present.—*Monatsch. f. Chem.*

Naphthalin as a Cause of Cataract.

—M. Bouchard has managed to induce cataract in rabbits by introducing naphthalin into the digestive canal. The quantity required for the purpose was a daily dose equal to a thousandth part of the animal's weight.

CORRESPONDENCE.

Berry's Perculator.

DEAR SIR:—In reply to Query No. 1,763, with regard to Berry's perculator, I would say that I have used a set of them for the past two years and have no hesitation in saying that it gives perfect satisfaction. I prepare my own fluid extracts and tinctures with it, and have no waste of alcohol worth mentioning. In making one pint of fluid extract, I reserve the first fourteen ounces, then exhaust with water and evaporate to two ounces and add to the reserve. I have not had a failure since I got it and think M. E. B. would be well pleased with it.

I remain, yours truly,
C. E. H.

IRROQUOIS, ONT.

Thomas' Electric Oil.

INCLOSED find formula for Thomas' Electric Oil as given by L. L. Briggs, of New Hampton, Iowa:

R Gum Camphor ½ oz.
Oil Gaultheria..... ½ "
" Origanum..... ½ "
Chloroform..... 1 "
Laudanum..... 1 "
Oil Sassafras..... 1 "
" Hemlock..... 1 "
" Turpentine..... 1 "
Bals. Fir 1 "
Tr. Guaiacum..... 1 "
" Catechu..... 1 "
Alcohol..... 4 pts.
Alkanet..... sufficient to color.

Yours, H. & W. KEPHART.

Thompson's Eye-Water.

TAKEN from Kilner's formulary:

R Sulphate of Copper grs. x.
" " Zinc..... " xl.
Rose Water. 2 pts.
Tr. Camphor..... 4 drs.
" Saffron..... 4 "

Mix and filter.

H. & W. KEPHART.

BERRIEN SPRINGS, MICH.

"Parisian Carmine."—This is a favorite cosmetic at the present time, and is made as follows:

Two parts of the finest quality of carmine found in trade are mixed carefully with one part of the best French chalk (talc) to the finest possible powder. The latter ingredient is not added as a sophistication, but because it assists or facilitates the application of the carmine to the face. In the shops at Bordeaux, the packets of this preparation are labelled Carmin Parisien.—*Monthly Magazine*.

An Ancient Prescription for Hydrophobia.—In 1806, the State of New York paid one John M. Crous, on the 26th of March, \$1,000 for his prescription to cure hydrophobia. According to the *Albany Gazette*, of March 31st, 1806, this consisted of one ounce of the jaw-bone of a dog, burned and pulverized, the false tongue of a newly foaled colt, dried and pulverized, and a "scruple of verdigreas," raised on the surface of old copper by laying it in moist earth. Directions for treatment followed, involving, in a certain contingency, a dose of 120 drops of liquid laudanum.

The Quantity of Olive Oil produced in Italy last year is in 1885 reported as being 52.34% below the average annual yield, which is calculated at 74,921,000 gallons. Of the 39,212,800 gallons produced, 11% was of superior quality, 73% good, and 16% mediocre.

QUERIES & ANSWERS.

Queries for which answers are desired, must be received by the 5th of the month, and must in every case be accompanied by the name and address of the writer, for the information of the editor, but not for publication.

No. 1,794.—Reichert's Method of Butter Analysis (Louisville).

Prof. E. Waller, of New York, recently published a modification of Reichert's process, which may be found in the *The Journal of the American Chemical Society*, 1886, p. 155.

No. 1,795.—La Fayette Mixture.

A correspondent desires to know where he can find the original publication of this formula.

We are unable as yet to furnish any clue to its origin besides the statement by one of our friends, who devotes special attention to venereal diseases, that the formula is "said to have been brought to this country during the last century, by a certain general of that name, for personal use."

No. 1,796.—Ottonia Anisum (M.).

Ottonia Anisum is the botanical name given by Sprengel to a piperaceous plant of Brazil which is called jaborandi in some districts. It is well known that the name *jaborandi* is applied to various plants belonging to the natural families Piperaceæ and Rutaceæ. *Ottonia Anisum* Spr. (or *Serronia Jaborandi* Guill., or *Ottonia Jaborandi* Kth.) has been used in homœopathic practice, but, so far as we know, never by the regular school.

No. 1,797.—Sublimate Paper as Dressing (Subscriber).

It is only quite recently that we have seen a notice in Schmidt's *Jahrbücher* on this subject. Dr. Goedicke reports that he has for more than a year been in the habit of using filtering paper dipped into a solution of corrosive sublimate containing 2 parts of the salt in 1,000 together with 5 per cent of glycerin, and afterwards dried. The paper is applied to the wound in from 2 to 8 layers and fastened by a bandage.

No. 1,798.—Removal of Ink Stains from the Skin (W.).

Oxalic acid is probably the simplest and cheapest agent for removing stains of iron-ink. A mixture of equal parts of oxalic and citric acids is still better, as it seems to have a more rapid solvent action.

Nigrosine ink is best removed by friction with a nail-brush and plenty of water and soap.

Eosine ink soon yields to ammonia and friction.

Violet aniline ink is readily removed by washing with a mixture of alcohol and acetic acid.

No. 1,799.—A Bothersome Pill-Mass (W. E. D.).

This correspondent sends us the following prescription which, he says, he tried twice without getting a good mass. At the third trial he succeeded.

℞ Cupri Sulphatis gr. 32
Acidi Carbolic. gr. 30
Extr. Gentianæ gr. 30

M. Fiant pilulæ 30.

He does not say how he managed the third time.

The pills evidently require some fibrous powder to absorb the liquid and keep them from collapsing. If crystallized carbolic acid is triturated with sulphate of copper, the mass will require much less fibrous powder. If the liquefied acid is taken, it will require more. A little powdered althæa

or liquorice root will overcome the difficulty.

No. 1,800.—Kentish's Ointment (A.).

The name of this is not "Kentish Ointment," and the county of Kent in England has nothing to do with it. It is named after Dr. Edw. R. Kentish, of Newcastle-upon-Tyne (died in 1832), who wrote "An Essay on Burns, especially upon those which happen to workmen in mines from the explosion of inflammable air, etc." (London and Edinburgh, 1798), in which he recommends the following:

℞ Cerati Resinæ 3 2
Olei Terebinthinæ 3 2 to 4

This has long been in great repute, and is even yet in use.

No. 1,801.—Prescription Query. (C. P. C.).

"Wherein lies the danger in dispensing the following:

Nitric Acid 8 fl. dr.
Tincture of Chloride of Iron 6 fl. dr."

The risk is simply this, that the nitric acid will react with the alcohol of the tincture, and produce aldehyde, nitrous and probably also nitric ether, and perhaps other volatile compounds, which have low boiling points, and would either cause an explosion of the bottle, if this were stoppered, or which would, at all events, gradually become dissipated. We can see no use for a mixture like the above. If the two substances are to be combined, the acid should be employed in a dilute condition. If it is intended to combine the caustic properties of the acid with the styptic properties of the iron, the solution (not the tincture) of chloride of iron should be used.

No. 1,802.—Formic Acid from Chloral (E. A. C.).

"Please inform me if formic acid would at any time be produced by the following:

℞ Chloral Hydr. gr. 25
Acid. Carbolic gr. 15
Vaselin. 3 1

M. Fiat unguentum.

"I contend that it will not be formed, unless some alkali be present. If formic acid is formed, how should they be combined so as to avoid this?"

Answer.—You are perfectly correct in contending that the chloral would suffer no decomposition under the given circumstances. To decompose chloral into chloroform and the formate of an alkali metal, it would be necessary to add a caustic alkali to the chloral.

No. 1,803.—Manufacture of Spirit of Nitrous Ether (E. W. B.).

B. asks us to outline the mode of manufacturing spirit of nitrous ether on a large scale; and whether it is distilled from a tinned copper still and condenser, or from glass.

Tinned copper or other ordinary metals are unsuitable as materials of stills for making spirit of nitre, owing to the rapid action of the nitric acid upon the metal. Glass flasks or retorts are the only suitable material. It is usual to use glass retorts, because, when flasks are employed, the preparation of the proper connections with the condenser requires more care and time. When working on a large scale, there is no necessity for deviating from the proportions given in the pharmacopœia. Only, instead of one apparatus being set up and kept going, a series of such apparatus is made to do duty at the same time.

No. 1,804.—Sulphate of Copper Crayons (M. S.).

On page 77 of our last April number we published several processes for preparing cones or crayons of sulphate of copper. Here is an additional one:

Sulphate of Copper 60 parts.
Gum Arabic, best 4 "
Distilled Water 4 "

Powder the sulphate of copper and pass it through a very fine sieve (100 meshes to the linear inch). Make a thick mucilage with the gum and water. Gradually incorporate with it the sulphate of copper, mixing them in a mortar until the mass has acquired a pilular consistence. Then roll this into cylinders of about two inches in length and of the thickness of a lead-pencil, or make it into cones of suitable size, and dry at the ordinary temperature. They should be allowed to become quite hard and cohesive before being used.

No. 1,805.—Pills of Protochloride of Iron (A., N. Y.).

A method for preparing such pills has recently been given by A. Simon, in *L'Union pharm.*, which the author recommends as preferable to that given by the Codex, as the pills are not liable to spoil from an oxidation of the iron salt. This formula is as follows:

Protochloride of Iron (Ferrous chloride) 75 gra.
Sugar, powdered 15 "
Althæa, 4 " 15 "
Tragacanth, powdered 8 "
Syrup q. s.

Make 50 pills, roll them in powdered (or reduced) iron, and then coat them with balsam of Tolu dissolved in ether. Roll them, while still wet with this solution, in powdered sugar; allow them to dry, remove the excess of sugar by sifting, and finally give them a second coat of balsam. Preserve them in well-stoppered vials.

No. 1,806.—Druggists' Sifting Machine (D.).

The best hand-sifting machine for druggists' use which we are acquainted with is that originally patented and sold by Harris, of Springfield, Mass. It works by a shuttle motion, the sieve being square, and travelling on rollers. Below the sieve is a drawer which receives the powder, and the machine is provided with a lid which prevents the dust of the powder from being scattered about. The bottom of the sieve—the sieve proper—is removable. Any desired number of sieves, corresponding to different grades of powder, can be furnished with the machine. The present owner of the patent is Peter Perry, of Springfield, Mass., and Mr. J. T. Webber, corner of Main and State street, same city, has the agency for the sale of the machines.

No. 18,07.—Liquid Glue (Subscriber).

It is not only acetic acid which may be used for preparing liquid glue, but also certain other acids, the most usual being nitric. Proceed as follows:

Break up 1 pound of good common glue into small pieces, and pour upon it 1 pint of water, taking care that the whole of the glue shall in turn be brought in contact with the water, so that it may become uniformly soft. Then melt it, in a covered vessel, on a water-bath, cool it, and add 3½ fl. oz. of nitric acid of spec. gr. 1.335, in small portions, stirring well after each addition. Finally put it in bottles. This glue will not gelatinize, and still possess its full adhesive power. It is, however, very acid, and cannot be used where acids would be injurious. If the nitric acid were to be neutralized, the glue solution would lose most of its adhesiveness.

If oxalic acid is used in place of nitric, and a gentle heat be employed while the acid acts on the glue, the result is the same as with nitric, so far as adhesiveness is concerned. But there is this difference, that the oxalic acid may be removed by lime, and the residuary liquid glue will be found to have lost none of its adhesive property.

No. 1,808.—Permanent Starch Paste (B.).

Starch paste may be preserved in various ways. Probably the most usual is by adding to it some alum.

We have for some time made use of the following formula which answers every purpose, the product keeping well, and having, besides, a pleasant odor:

Starch.....	1 oz.
Borax.....	1 oz.
Glycerin.....	1 fl. oz.
Tinct. Benzoin.....	½ fl. oz.
Boiling Water.....	16 fl. oz.

To the Boiling Water add the Borax and Glycerin. Then add the Starch previously made into a moderately thin paste with water. Stir until the Starch is gelatinized. Then add the Tincture, and when the alcohol has boiled away, strain through loose-meshed muslin. Keep in small corked bottles.

No. 1,809.—“Extract of Copaiba” (J. A. M.).

Our correspondent asks us what “Thorn’s Extract of Copaiba” is, which is mentioned in Milton’s work on gonorrhoea recently published.

In 1827, James Thorn, M.R.C.S., of London, published a pamphlet entitled “Observations on the Treatment of Gonorrhoea by a new Preparation from the Balsam of Copaiba” (London; for Highley, 12mo, p. 27). This preparation he called “Extract of Copaiba,” and it was to be prepared by carefully distilling the essential oil off the balsam when the residue (constituting five-sixteenths of the original balsam) constituted the “extract.” Of course, this is nothing else but the *Resina Copaiiba*, which has, since that time, off and on, been highly lauded as an efficient anti-blennorrhagic, etc. It was even made official in the last U. S. Pharm., but does not seem to be any better than the balsam itself.

No. 1,810.—Ink for Type-Writer (U. S. Army).

1. “Will aniline purple dissolved in glycerin, injure rubber, if the latter is constantly left in it?”

No, it will not.

2. “What is the best way to dissolve the aniline color in mixing it with glycerin for ink to be used on pads, etc.?”

Use the process published in our May number, in the paper by Mr. Isidor Furst.

3. “Is there anything in the purple diamond dyes, which, when mixed with glycerin, will injure rubber if constantly used on it?”

Not to our knowledge.

4. “Formula for black ink for typewriters?”

See Mr. Furst’s paper referred to above. [Note.—The “tannin-black” mentioned on p. 131 of our volume for 1884 is said to work well; but we have been unable to procure it so far.]

No. 1,811.—Black Ink or Paint for Lettering Tinned Ware (N. O.).

The most simple compound for this purpose is a mixture of ordinary shellac-varnish with lampblack. The latter should be rubbed in a mortar with a little of the varnish until the mixture has become perfectly smooth and homogeneous, when it may be diluted with enough of the varnish to make it of the proper consistence.

An ink for this purpose may also be made by making a solution of 1 part of sulphate of copper in 20 parts of distilled water, and adding two drops of hydrochloric acid for every 16 grains of sulphate of copper used. A little mucilage ought also to be added. And besides, in order to be able to see the writing at once, a little pyrogallol acid may be added. For writing with this ink, a copper pen must be used.

Another ink recommended for this purpose is prepared from 8 parts o

sulphate of copper, 4 parts of chloride of ammonium, 1 part of lamp-black, 6 parts of acetic acid, and water q. s.

No. 1,812.—Apol (A. E. M.).

We are asked the question: “What am I supposed to dispense, when *apoli* is prescribed? Heretofore I have kept on hand a thick greenish liquid which apparently corresponds, in every respect, to the description given in the text-books or works of reference at my disposal. Nor have I ever been informed by the wholesale houses I dealt with, that any other kind is to be had in the market. Now I am told by one of my patrons that the proper kind of *apoli* to dispense is that which is in *crystals*. Will you please state whether my informant is correct.”

Apol was first obtained by Homolle and Joret, as a colorless, oily liquid which could be cooled to -12°C . without congealing. As the seeds of parsley have long been used in France as a domestic remedy in intermittent fever, Homolle and Joret, after experimenting, recommended the oily liquid “*apoli*” for this purpose, and almost all the existing therapeutical literature, referring to the subject, is based upon the substance in a *liquid* condition. In 1876, E. Gerichten proposed to restrict the term *apoli* to the stearoyen existing in ethereal oil of parsley. This appears in handsome colorless or white crystalline needles, and is undoubtedly the active and odorous constituent of the oil. Nevertheless, its existence has not yet become sufficiently known among medical men, and the probabilities are that out of twenty who prescribe *apoli*, there is perhaps but one who is aware of the change in name and the existence of a crystalline substance called by that name.

In view of the fact that the crystalline *apoli* is now given in about the same doses as the liquid (which was an ethereal extract), and as the crystals are a purer form of the drug, we think that every dispenser is justified in using this form in preference to the less pure which was used heretofore.

But then it is his duty, in this and all similar cases, to communicate with the prescriber, so that a knowledge of the new fact may be properly disseminated.

No. 1,813.—To Silver Glass (A. D.).

The following process is that of R. Böttcher:

Triturate 8 parts of nitrate of silver in a porcelain capsule with water of ammonia gradually added, until the liquid, which has at first become muddy, becomes clear, avoiding, however, an excess of ammonia. To the solution add 2 parts of powdered sulphate of ammonium, and then 700 parts of distilled water. Transfer the liquid to a bottle of dark or non-actinic glass, in which it may be kept for a long time.

In another bottle dissolve 2.4 parts of pure grape-sugar in 700 parts of distilled water, in which 6 parts of pure caustic potassa had previously been dissolved.

When the solutions are to be used, mix equal volumes of them, pour the mixture into the glass vessel to be silvered, and move it about so that the whole of the surface to be coated may be wetted by the liquid. In ten or twelve minutes the coating will be completed.

The process must be repeated several times, until the coating attains the proper thickness. Then the vessel is carefully rinsed with rain or distilled water, and dried by exposure to air. Finally, the coating is varnished, for which purpose a solution of equal parts by weight of damar and ether is recommended.

No. 1,814.—Preservation of Ergot (D. P.).

Ergot, even when unground, does not keep in good condition for more

than about one year, and even then it must be kept in a cool and dry place. When ground, it will not keep for more than one-half the above period under ordinary circumstances. The chief cause of the alteration is held to be the fixed oil contained in it, and when this begins to become rancid, others of the constituents are likewise soon affected.

There is no reliable method of distinguishing old ergot from fresh, if the physical characteristics do not already show the difference. Some idea of the age of the ergot, however, may be obtained by using a method proposed by Koster, viz.: To pour 6 cubic centimeters upon two grammes of the ergot in question, previously ground, if not already in this condition, and to set it aside for a time, skaking repeatedly. If the ergot was fresh, the ether will remain almost colorless; the older it is the more yellow will be the ethereal solution. According to Bernbeck, an extract of fresh ergot has a neutral, that from old ergot an acid reaction.

No. 1,815.—Re-silvering Scale-Pans (W.).

Brass scale pans or any other metallic substance capable of taking a deposit of silver may be plated in various ways. Here is a method recently recommended by R. Kayser, which one of our friends has tried with good success.

It is absolutely necessary that the article to be plated shall present a perfect metallic surface, free from oxides, dirt, grease, etc. It must be thoroughly scoured, if necessary with the intervention of acids, and afterwards carefully washed. It is then to be dipped into a solution prepared by making a saturated aqueous solution of bisulphite of sodium, and adding to the latter so much of a solution of nitrate of silver (30 parts in 100), that there are 6 parts of the silver salt for every 100 of the bisulphite. The following would be a more simple way to state the proportions:

Bisulphite of Sodium.....	100 parts
Water, enough to dissolve	
Nitrate of Silver.....	6 parts
Water.....	20 parts

Dissolve and mix.

Allow the article to remain in the mixture until it is properly coated, then take it out; wash it with water in which a little carbonate of sodium had previously been dissolved, finally with pure water, and dry in sawdust.

No. 1,816.—Prescription Difficulty (D. S. P.).

The following prescription has been submitted to us for the purpose of stating whether it is dangerous or explosive:

R Tr. Iodi.....	33
Aqua Ammon.,	
Glycerini,	
Ol. Terebinth.....	aa 31

M. Fiat linimentum.

We have prepared the above and have mixed it in several methods, pouring the water of ammonia into the tincture, or the oil into the tincture, and adding the glycerin afterwards; also vice versa. There is a blackish matter, much resembling iodide of nitrogen, precipitated when the ammonia is added to the tincture; but, though we have filtered it off and have manipulated it considerably, it would not go off or explode. Finally, we found that it consisted, at least in part, of precipitated iodine. Now, while dry powdered iodine acts violently upon oil of turpentine, the same, when mixed with water or water and glycerin, does not seem to be similarly affected. At least, in the above mixture nothing remarkable has so far been noticed.

We do not think that there is great risk in preparing it, but would nevertheless advise caution.

One very pertinent query we would like to append: Why prepare or compound such an incongruous mixture which is neither a paint nor a liniment?

No. 1,817.—*Lachesis* (Buffalo).

Lachesis is the name of a homoeopathic remedy prepared from the poison of the *Trigonocephalus Lachesis* L. (*Lachesis rhombata*; *Crotalus mutus*), a poisonous snake inhabiting the hot countries of South America. This snake attains a length up to seven feet and more, and its poison fangs are nearly an inch long. The Indians and negroes eat the flesh. In what manner the poison is obtained for the use of homoeopaths is not known to us, nor have we been able to ascertain so far. That the poison, when introduced into the blood, acts with great energy and often causes death, unless immediate treatment can be had, is attested by many authorities. It was first "proved" by Dr. Hering, who states that, while preparing a trituration with milk-sugar, he inhaled the dust, which produced a whole host of the most extraordinary symptoms, among which may be mentioned a "great anxiety, apprehension of some great evil or misfortune; towards evening, a maddening, almost delirious jealousy (!), then lassitude and sleepiness, but at the same time great garrulity, incoherent babbling, etc., etc." All of which we quote with the remark that there is no scientific proof whatever of the alleged physiological effects of the drug.

The word *Lachesis* is taken from the Greek mythology, where *Λαχέσις* is the name of one of the Fates (*Parcae*, *Moirai*), whose special function was regarded to be that of determining each mortal's fate.

No. 1,818.—Colored Aniline Inks (J. K. & Co.).

The following recipes will be found of practical use:

1. *Red*. Dissolve 1 part of water-soluble eosine in 150 to 200 parts of hot water.

There are several grades and shadings of eosine, some with a tint approaching yellowish-red. We prefer the latter, because they are so distinctive; some persons prefer a tint more approaching that of carmine.

2. *Blue*. 1 part of water-soluble bleu de nuit (Paris blue) in 200 to 250 parts of hot water.

Any kind of water-soluble blue of proper tint may be used at the present time, when the difference between poisonous and non-poisonous aniline colors is not very great. But it is preferable to use only such colors as are non-poisonous, that is, those which are made without the intervention of arsenic acid.

3. *Green*. 1 part of methyl-green in 100-110 parts of hot water. If the color is desired to have a yellowish-green tinge, this may be produced by the addition of some picric acid.

In place of methyl-green, the so-called "iodine-green" may be used. But this is very expensive, and has almost gone out of date, there being only a few factories that still make it in small quantities.

4. *Violet*. 1 part of Hofmann's Violet No. 6, or other desirable shade of violet, in 600 to 700 parts of water.

5. *Black*. 1 part of water-soluble nigrosin in 80 parts of water.

6. *Yellow*. For this tint aniline colors cannot be recommended. It is preferable to use a solution of 1 part of picric acid in 120 to 140 parts of water.

All of these inks may be made more lasting and less liable to be wiped or washed off by adding to them a little gum arabic. Some of them may be rendered almost indelible by the addition of a grain of bichromate of potassium and 2 grains of gelatin to each fluidounce of ink.

No. 1,819.—Anhydrous Sulphate of Zinc Caustic (New York).

The caustic you inquire about is used by several of the leading surgeons of this city in the treatment of cancers and of sloughing sores which have a tendency to spread. It is particularly useful when it is necessary to avoid any spreading of the caustic to adjoining healthy tissue. This caustic is prepared in the following manner:

Take any desired quantity of sulphate of zinc (say $\frac{1}{2}$ oz.), and allow it to effloresce in a warm place until it has been converted into a dry powder. Place this into a porcelain or platinum crucible and heat it to dull redness for a short time, until every trace of moisture has been expelled. It is not advisable to at once heat the crystallized salt in a crucible over the flame, as it will melt and afterwards cake together to a hard mass, which requires powdering. Then cover it well, allow it to cool, and pass it through a very fine sieve, exposing the powder to the air as short a time as possible. Introduce it into a clean and dry wide-mouthed glass-stoppered bottle, and, by means of a glass-rod, mix it with enough colorless concentrated sulphuric acid to form a paste of a rather viscid consistence. The latter should be such that, when a little of it is applied on a vertical surface, it will not run. It should be about like commercial white lead ground in oil.

This preparation should be dispensed with caution against being exposed to the air, and a small glass-rod should be furnished with it, for applying it to the diseased part.

No. 1,820.—Arsenious Acid and Bromide of Potassium (Ch. A. L.).

When Dr. Clemens originated his solution of bromide of arsenic, he introduced it under the title "Das Arsenigsaure Bromkali" which is verbally translated, "arsenite of bromide of potassium."

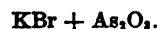
The existence of a true chemical compound containing arsenious acid and bromide of potassium had been reported first by H. Schiff and R. Sestini, but no extended notice appears to have been taken of their report, except in a purely scientific direction.

Fr. Rüdorff has recently published a paper in the *Berichte d. D. Ch. G.* 1886, p. 266, in which he reports that he has obtained crystalline compounds of arsenious acid both with iodide and with bromide of potassium. As the latter alone interests us here, we will quote from the author's paper the portion relating to it:

The compound was obtained in the following manner:

A solution of commercial arsenite of potassium (100 parts in 400 of water) was heated to boiling, about 20 parts of arsenious acid dissolved in it, and carbonic-acid gas conducted through the solution to saturation. After cooling, the solution had deposited some arsenite of potassium, and the liquid contained, in every 100 C.c., 15 Gm. of arsenious acid (As_2O_3) and 5.4 Gm. of carbonate of potassium, the alkali being calculated as pure carbonate. 420 C.c. of this solution were then diluted with 580 C.c. of water (to make 1,000 C.c.), the solution heated to boiling, and 20 Gm. of bromide of potassium dissolved in it. The vessel containing the solution was then wrapped in cotton (to retard the cooling) and set aside, strips of glass being placed into it. After a certain time, the latter were found covered with crystalline crusts. These crystals are, however, not quite pure, as they inclose a little mother-water, which it is difficult to get rid of. The crystals are shining, very hard and brittle, and, under the microscope, show the form of six-sided or twelve-sided, transparent, very short columns. Dried at $150^\circ C.$, they were found to contain As_2O_3 , 76.90%; Potas-

sium, 7.57%; Bromine, 15.53%, which corresponds to the formula:



It is not unlikely that Clemens' solution contains some of this compound, but it would be difficult to prove it.

If you wish to use the above compound therapeutically, the most suitable method will be by having a trituration of it made. It is not readily soluble in water, and is liable to break up, as a compound, in solution.

No. 1,821.—Glass-Stoppers in Bottles containing Solution of Potassa or Labarraque's Solution ("Inquisitor").

Referring to our remarks on the removal of glass-stoppers in our last August number, page 152, it has there already been pointed out that when glass-stoppers are once solidly glued together by the action of a caustic alkali, or some other strongly alkaline liquid, there is no hope of severing the connection. We are in receipt of a query from a correspondent in Washington, who desires to know whether glass-stoppers in bottles containing solution of potassa or Labarraque's solution, which have been bottled some time (say about six months), can be removed or not.

If the stoppers had been properly protected by being warmed and then coated with melted paraffin or with vaseline, and both the stopper and the neck had been thoroughly freed from every trace of the liquid, there is no reason why the glass-stoppers should not be easily removable. Paraffin, vaseline, or other mineral fats are not saponifiable by alkalis, and are, therefore, not attacked by them.

If, however, the neck of the bottle or the stopper had not been thus protected, it is almost certain that the stoppers will be no longer removable. There is no use in such a case trying the various plans recommended for loosening stoppers. It will be impossible to extract them. The best way is to knock off the neck with a hammer and to transfer the contents to other bottles, which ought to be stoppered with paraffined corks or rubber stoppers, or as above directed.

No. 1,822.—"Number Six."

We are asked to state what the original formula of this preparation is, and how it originated. Our attention is drawn to the fact that widely varying formulas are in existence, so, for instance, Remington, in his practice of Pharmacy, gives the following:

Capsicum..... 1 oz. (av.)
Myrrh..... 16 oz. "
Alcohol..... 8 pints

Make by maceration.

Nelson has:

Tincture of Capsicum..... 1 oz.
Tincture of Myrrh..... 3 oz.

Others have still other proportions.

By referring to "The Thomsonian Materia Medica or Botanic Family Physician," 12th edit., 8vo, Albany 1841, p. 709, we find the following original directions (abbreviated by us).

No. 6. *Rheumatic or Hot Drops* (Improved Rheumatic Drops).

1. Take 1 gall. of high cherry spirits, 1 lb. myrrh, 4 oz. golden seal, 4 oz. bayberry, 1 oz. cayenne; mix and shake once a day for several days. The solids must be powdered.

2. Take 1 lb. powd. myrrh, 1 oz. powd. cayenne, 1 qt. sweet wine. Let simmer for 20-30 minutes. Then add 2 oz. powd. prickly ash seeds, 1 oz. tinct. camphor, 1 gall. W. I. rum, 4 lbs. sugar. Excellent for all kinds of sprains, weak back, etc., also for dysentery, etc.

3. Take 1 gall. of any kind of high wines, 1 lb. pd. myrrh, 1 oz. cayenne. "Put in a stone jug and boil a few

minutes in a kettle of water" [= a water-bath]. Or let macerate, shaking seven times daily for a week.

It will be seen that there are three formulas for this still popular domestic remedy. It is evidently the third one which is usually intended to be followed. And Prof. Remington's formula is in accordance with this.

No. 1,823.—Embalming Fluid (Dr. G.).

Our correspondent informs us that he has frequent demands from certain of his customers for a preparation which will, at least for some days, preserve the bodies of the dead, so that the signs of decomposition may not be noticeable to the relatives and friends of the deceased.

A body may be preserved for a short time in moderately good condition by injecting into *all* the natural orifices of the body some antiseptic solution, which must be retained by proper contrivances. It is best to permit the first, or second injection to escape (if this can be done), and then to retain the next one. The fauces may be plugged with saturated tampons, a wad of cotton saturated with the solution may be introduced into the mouth, and small saturated tampons pushed up the nostrils, care being taken that the natural features are not disturbed and no sign of the appliances remains visible. If possible, a cloth dampened with the antiseptic liquid may be kept over the face and hands, to be removed only when necessary. But this is often impracticable. An antiseptic liquid suitable for such purposes should have but little odor, and that which is used for application to the hands and face should, moreover, be non-poisonous, to prevent accidents to members of the family who are liable to touch or to caress the face and hands of the departed. Solutions for injection or internal applications may be made in various ways, for instance:

1. Sulphate of Zinc, 1 lb.; Water, 4 pints.
2. Sulphate of Zinc, Chloride of Sodium, Alum, each 1 lb.; Water, 1 gall.
3. Chloride of Zinc, 8 oz.; Alcohol, 1 pint; Water, 3 pints.

The body should, of course, be kept upon ice, and be exposed to the air as little as possible.

Undertakers very commonly use saltpeter for temporarily preserving bodies.

To properly embalm a body, the services of an expert are required. It will be necessary to inject the blood-vessels with an antiseptic solution. This is, in reality, not difficult, but it requires some familiarity with anatomy and an operator accustomed to such work. The most simple way is to make an incision in the inner side of the thigh, by which the femoral artery will be exposed. This is denuded for a short distance, cut across, and the end nearest to the heart tied over the nozzle of a syringe containing the solution to be injected. A good solution for this purpose is 5 oz. of alum and 8 oz. of acetate of lead in 4 pints of water, the precipitated sulphate of lead being rejected. A solution of bichloride of mercury (10 grains in 1 fl. oz.) may also be used. Or a solution of chloride of zinc, though the latter causes a more rapid paling of the tissues than some of the others. When the injection is completed, both ends of the artery must, of course, be tied.

No. 1,824.—Compound Syrup of the Phosphates (A. S.).

The formula published by Parrish directed this syrup to be prepared by starting from crystallized sulphate of iron, which is to be precipitated by phosphate of sodium. This produces at first a ferrous phosphate, which, however, soon oxidizes, at least in part, and is liable to continue to do so

when the finished syrup is exposed to air, in consequence of which there is liable to be a precipitate formed, unless the solution is very acid. You will find the formula in the dispensatories.

The New York and Brooklyn Formulary presented a process differing from Parrish's mainly in this, that the ferric phosphate, rendered soluble by citrate of sodium (the scaled salt of the U. S. Ph. 1880) was employed. This diminished the liability of the syrup to form a precipitate, and also permitted a smaller amount of acid to be employed. Nevertheless, a slight precipitate will form, even under the most favorable circumstances, and no modification of the process has yet been devised which would prevent this under all circumstances. Experiments are, however, under way, which it is hoped may solve the problem.

Martindale has proposed a process, in which metallic iron is used as the starting-point, similar to that for Easton's syrup, which we had occasion to quote in answer to a query in our last issue.

The process is as follows:

Iron Wire, bright. 800 grains
Phosphoric Acid, sp. gr. 1.500. . . 8 fl. oz.
Distilled Water. 5 fl. oz.

Put these into a glass flask, so that the liquid completely covers the iron wire, plug the neck with cotton, and set it aside two or three days to dissolve.

Also mix together:

Slaked Lime. 720 grains
Phosphoric Acid, sp. gr. 1.500. . . 4 fl. oz.
Distilled Water. 15 fl. oz.

and subsequently add:

Carbonate of Potassium. 72 grains
Phosphate of Sodium 72 "

When this solution has become cold, add to it the iron solution prepared as above directed, whereupon a nearly perfect solution will be formed. Filter this and set it aside. Then take

Cochineal, powd. 240 grains
Distilled Water 8 pints

Boil for 15 minutes and filter, pouring enough distilled water through the filter to obtain 56 fl. oz. of filtrate. To this add

Sugar 7 lbs.

and heat until it is dissolved. When the syrup is cold, add the filtrate previously obtained, and set aside, and make the whole measure 1 gallon by the addition of distilled water.

(The weights and measures here given are the British.)

The syrup thus prepared contains in each fluidrachm about $\frac{1}{2}$ grain of phosphate of iron, and $\frac{1}{2}$ grain of phosphate of calcium, with small quantities of the phosphates of potassium and sodium. As it contains as much of the salt as will be retained in a clear solution, it should be kept in bottles quite full, as Mr. Martindale directs.

No. 1,825.—Detection of Antipyrin and Kairine in the Urine (Drs. N. and P.).

Antipyrin appears to be partly eliminated through the urine as a copulated compound, probably as antipyrin-sulphuric acid. When antipyrin is distilled with water, notable quantities of it pass over with the steam. But on distilling urine, after antipyrin has been given in moderate quantities, none can be detected in the distillate, unless the urine had previously been boiled with hydrochloric acid. This behavior is similar to that of phenol, which also appears in the urine partly as phenol-sulphuric acid (the phenol normally present in urine always appears as such), and does not respond to reactions until it has been split up by boiling with a mineral acid. When antipyrin is free in the urine, or has been set free (in which case the excess of acid must be afterwards neutralized), its presence may be detected by the color reaction with ferric chloride,

with which it strikes a red color. If there are but traces present, this test may fail. Nitrite of sodium or a little nitrous acid added to the urine, or to a dilute solution of antipyrin, produce a bluish-green tint.

Kairine likewise reacts with nitrite of sodium, if the solution is first acidulated. The solution is thereby rendered blood red. After kairine has been taken internally, the urine acquires a darker tint, sometimes approaching grayish-black—a phenomenon which occurs also after the administration of carbolic acid, pyrogallol acid, hydroquinon, resorcin, etc. If it be acidulated with acetic acid, and then mixed with a little chloride of lime, it acquires a claret wine color.

No. 1,826.—Incompatible Mixture (C. P. C.).

This correspondent sends us a formula containing the following ingredients:

Tincture of Curcuma. 1 oz.
Oil of Sassafras. 1 "
" " Citronella. 1 "
" " Origanum 1 "
Camphor. 2 "
"Turpentine" 4 "
Olive Oil. 4 "
Alcohol. 1 pt.
"Coal Oil" 1 qt.

and wants to know if there is any way in which they can be made into a mixture. Our answer will briefly be "no!"

By the way, it is about time that the name "Oil of Origanum" should be dropped, when Oil of Thyme is meant. True Oil of Origanum is a scarce article, costing some 12 dollars a pound. What used to be called Oil of Origanum in the trade—and a great deal of which was, and is still, used as an ingredient in certain liniments, is Oil of Thyme (*Oleum Thymi*, U. S. Ph.). Another bad habit we would like to see dropped, namely, the use of the word "Turpentine," when "Oil of Turpentine" is intended. "Turpentine" should be restricted to denote the natural gum-resinous exudation from the pine and other members of the family. Of course, our remarks are intended primarily to apply to the language as it should be spoken and written by members of the pharmaceutical profession.

No. 1,827.—Compressed-Pill Machine (W. H. P. & Co.).

We know of no new apparatus for making compressed pills on a small scale, better than Remington's, which we illustrated and described in our volume for 1877 (*NEW REMEDIES*, 1877, p. 171), and which you will also find in Remington's "Practice of Pharmacy," p. 977.

Formulæ Asked For.

1. Barker's "Hirsutus," a hair preparation made in New York.
2. Ham's Oil of Gladness. What is it?

J. T. L. is respectfully reminded that we do not answer queries that are not accompanied with the name and post-office address of the correspondent.

The Use of Ergot for Illicit Purposes has increased so much in Rome that the Prefect has issued a circular to the syndics of the city and province, calling upon them to enforce the regulations as to the sale of the drug.

Organization of India-Rubber.—Close upon the experiments with sponge-grafts in the closure of wounds, we have the announcement by Prof. Van Lairs, of Liège, before the Academy of Medicine, of the curious fact that a tube of india-rubber, placed between the two ends of a cut nerve, becomes vascularized, the nerve-fibres are prolonged into it, and finally the two ends of the nerve unite, and the caoutchouc disappears.

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